AMIGA WORLD

March 1991
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Just The Facts:

What Makes Digi-Paint 3 the Ultimate Paint Program?



"Finding the best paint program for your Amiga can be confusing, but once you have the facts it's simple."

Laura Longfellow
Sales Manager
NewTek Inc.

"Why is Digi-Paint 3 better than DeluxePaint III™?"

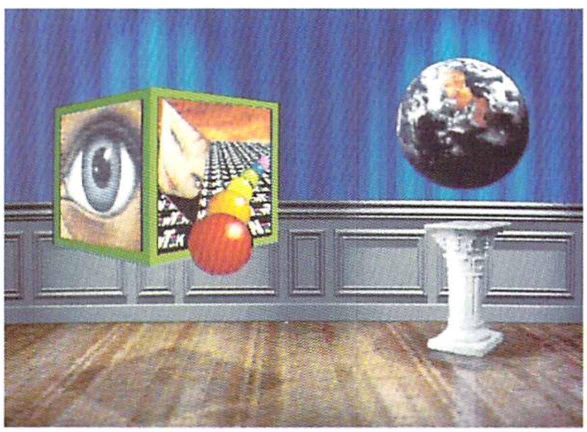


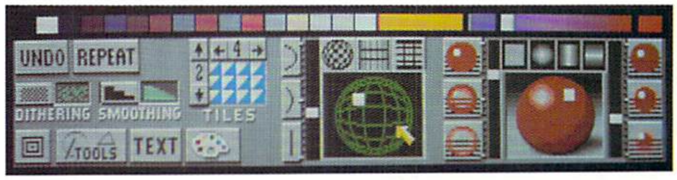
Digi-Paint 3 works in the Amiga's powerful Hold And Modify (HAM) mode, which allows you to paint using all 4096 colors simultaneously. By comparison, Deluxe Paint III (by Electronic Arts) operates in less sophisticated modes, restricting you to a maximum of only 64 colors. Advanced features available in Digi-Paint 3 – including Colorizing, Variable Transparency, Shading, Lighten, Darken and Range Painting – are simply not possible in Deluxe Paint III due to its 64 color limitation. AMIGAWORLD warns, "Competitors may want to head back to the drawing board, because Digi-Paint 3 is hard to beat!"

"What makes Digi-Paint 3 better than other HAM paint programs?"

Digi-Paint 3 is the only Amiga paint program written in 100% assembly language. Although challenging to program (taking up to 10 times longer than other computer languages), it's the only way to achieve the incredible speed found in Digi-Paint 3. AMIGAWORLD calls it "the fastest HAM paint program yet" and AMIGA SENTRY estimates it's, "6-10 times faster" than the nearest contender.

Other advanced features found *only* in Digi-Paint 3 include: anti-aliased texture mapping, anti-aliased fonts, ARexx support, 1024 x 1024 super bitmaps with auto-scrolling and dithering to 30 bits per pixel (over a billion colors internally, giving you tens of thousands of apparent colors). COMPUTER SHOPPER magazine reports "Digi-Paint 3 is without a doubt the most advanced HAM paint program to date!"





"But is Digi-Paint 3 easy to use?"

I've learned that no matter how powerful a program is, if it's not friendly it's not worth my time. We designed Digi-Paint 3 with all users in mind – from the beginner just starting out with computers, to the "power user" who demands the most advanced features possible. The spiral-bound manual contains a step-by-step Guided Tour, 11 hands-on tutorials, a color coded reference card, and almost one hundred example photos.

Digi-Paint 3's intuitive user interface was created by Digi-View designer (and NewTek Founder) Tim Jenison and renowned Amiga artist Jim Sachs. It features innovative "Dashboard" controls which AMIGAWORLD regards as "a joy to use" and "very easy to learn and understand". INFO MAGAZINE says the new interface "looks great and works logically".





"What is the Transfer 24 program included with Digi-Paint 3?"

Transfer 24 is a separate program disk included in the Digi-Paint 3 package, allowing you to alter any picture's brightness, color saturation, contrast, hue and sharpness, almost as easily as adjusting the controls on your television set. Transfer 24 also lets you modify the size, palette, and resolution of any picture. These powerful features, known as "Image Processing", give you incredible control over your final artwork. You can also save your image in any of the Amiga's 24 resolution modes (up to 768x480) making it compatible with all Amiga graphics software. AX MAGAZINE notes that "Transfer 24 gives you even more options as to the final appearance of your work". AMIGAWORLD declares, "Transfer 24 is great for making overall changes."

"What technical support does NewTek offer?"

Digi-Paint 3 has one other thing you won't find in any ordinary paint program: a toll-free help line. If you should have any questions while using Digi-Paint 3, you're not on your own. Call NewTek's technical support team at 1-800-736-7617 Monday through Friday, 8 am -7 pm Central Time.

Digi-Paint 3 is available now at your local Amiga dealer or call **1-800-843-8934** or **1-913-354-1146.**

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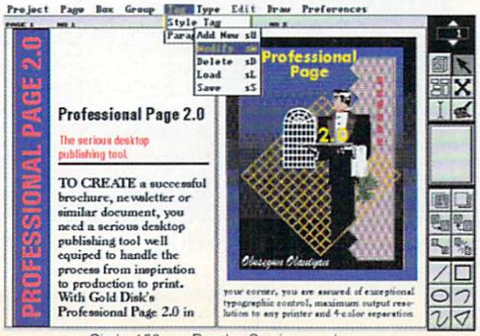
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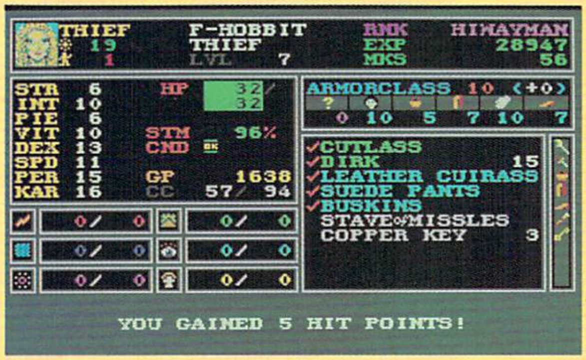
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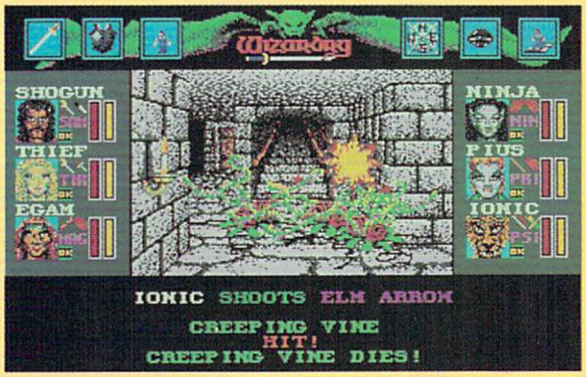
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Actual Screens from MS-DOS Version

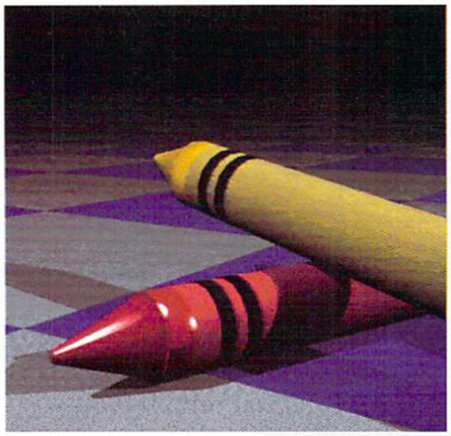


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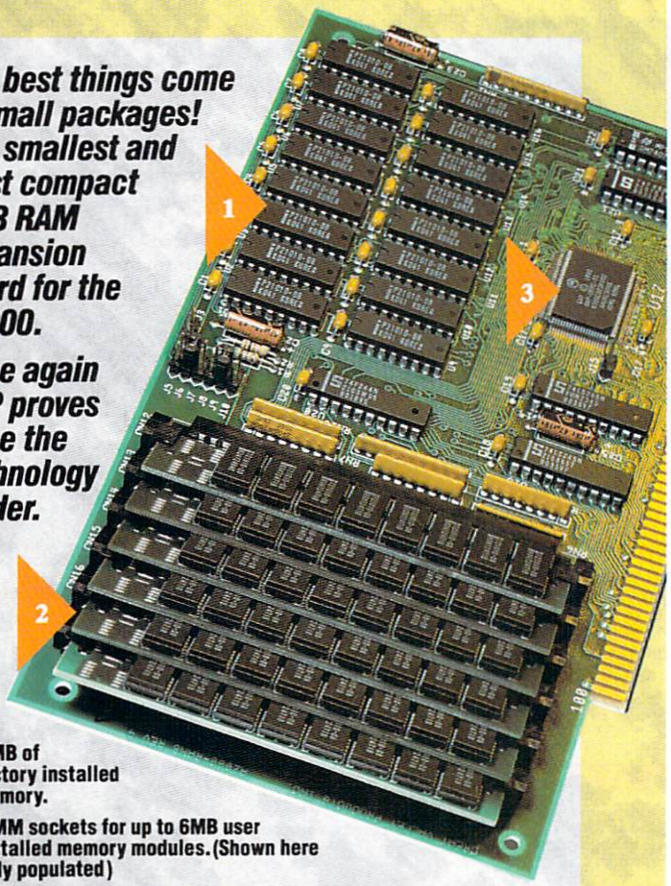
C·O·N·T·E·N·T·S



There's a lot happening in the world of Amiga 3-D software lately, with new programs like Imagine, the Video Toaster's LightWave 3D, Animation: Journeyman, and others just hitting the market. Some offer modeling, rendering, and animation possibilities never dreamed of before. So, as the monitor screen on our cover (inset above) suggests, grab hold of some of these tools, let your hair down, and get creative!

COVER PHOTOGRAPH BY ED JUDICE
SCREEN IMAGE BY DON WHITAKER

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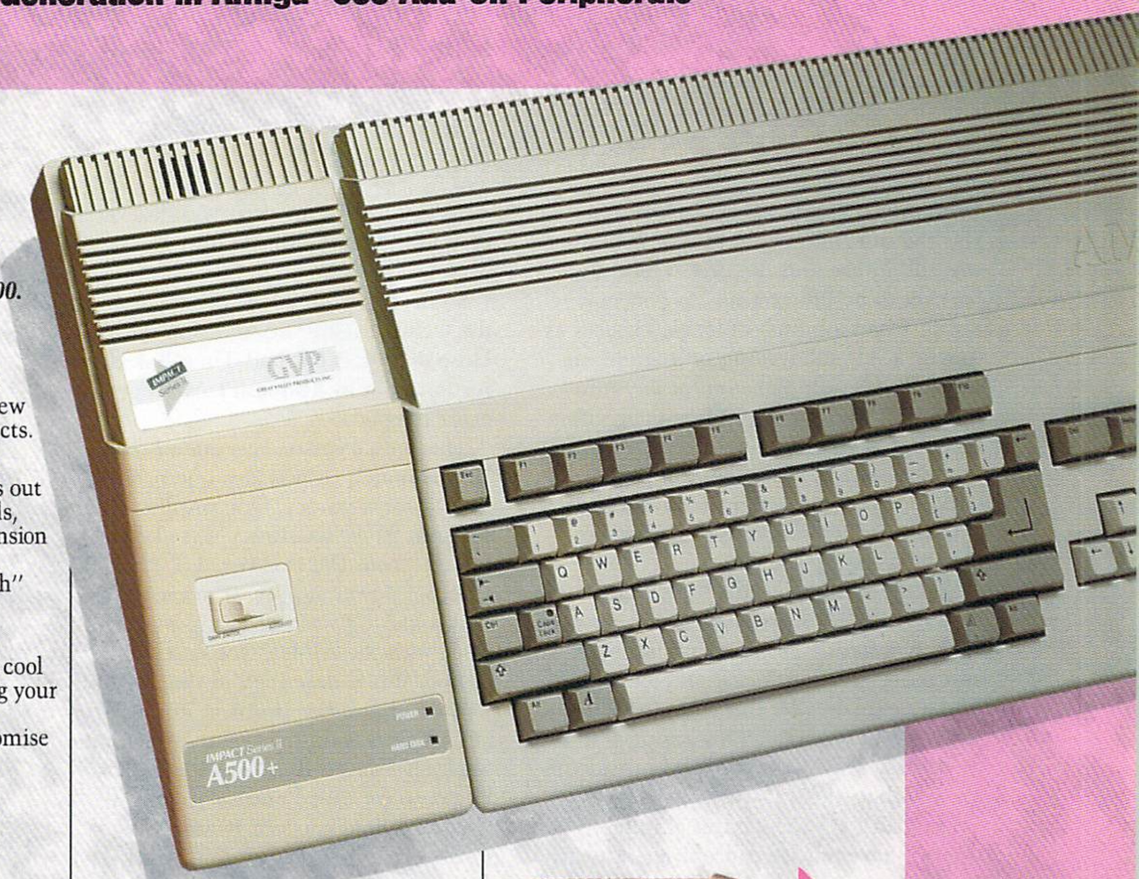
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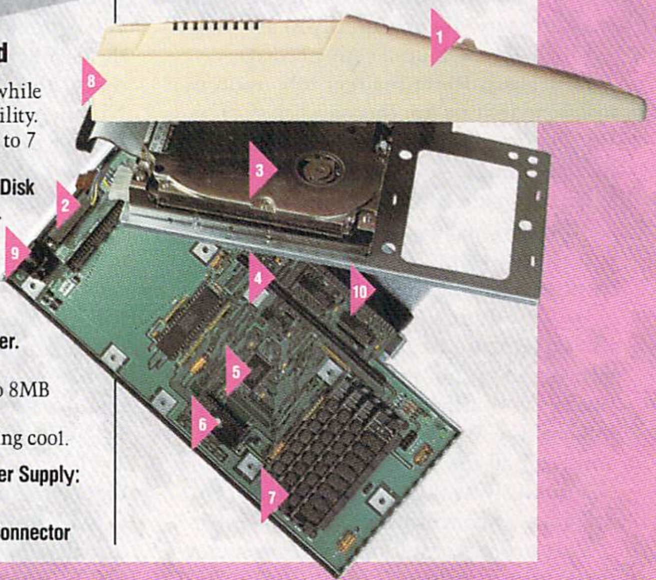
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CHIEF CONCERNS

Checking the facts: our avenue to accuracy.

LAST MONTH'S COLUMN brought you the story of my old Amiga 2000 that was still in use and the new A3000 that had yet to be fully set up. As you may recall, I had a bunch of feeble excuses as to why I was still writing on the old machine that "could flake out at any minute." Well about a week after the column was filed, it flaked, taking with it about a month's worth of files that hadn't been backed up. I can't even think of a bad excuse as to why those files weren't sitting on a floppy somewhere.

So now I am using the 3000 daily, and although its 18 megs of RAM have yet to be fully tested, I am enjoying its snap and more gracious looks. Of course that doesn't explain why this column is being written on an A1000. This happens to be the system I use at home, and outside of a v key that sticks, it works swell.

I'm glad I am writing this at home, where I have time to concentrate, for this is a fairly serious column. If you are looking for yuks, pick up a copy of MAD.

Most *AmigaWorld* readers rely upon us to one extent or another, and that's fine. But like any entity based upon the toil of human beings, *AmigaWorld* is not perfect. We have made errors and will probably continue to make some as long as the content is written, edited, and checked by imperfect human minds.

We hate errors. They are the reason we implemented a fact-checking process wherein facts (not opinions) appearing in reviews and articles are checked prior to publication. We telephone the vendor and read all the facts presented, while scrupulously avoiding any mention of opinions or conclusions.

This process is still not perfect. Sometimes, we just plain screw up. Some magazines are embarrassed and sweep these sorts of errors under the rug, so the reader is often none the wiser. You deserve better than that. You deserve to be told the truth. So when we make errors, we admit it.

So here are our cards on the table. In the October issue, we said that the JVC HR-S10000U VCR had Time Based Correction built in. It doesn't. We regret this error deeply.

The January issue was one of our best. Unfortunately, it was also one of the worst—for accuracy. One product that suffered from inaccuracy was SketchMaster, from Dakota. We said it has an external power supply. It doesn't. We said soldering was needed to make it work with the A1000. Not so, even though this is described in the manual.

We had another problem in the January article, "A Case in Paint." We wanted to review Macro Paint from Lake Forest Logic, so we called and told them we needed a final version. It wasn't ready, so we snapped up an unfinished, beta version and got the author working. As the deadline approached, we received a disk with a fresh label that said Serial Number 1057, Version 1.0.

After publication, Lake Forest told us this second disk was in fact another beta, and *not* the finished product.

To try to avoid all such slipups, we intend to make our fact-checking procedure more rigorous. From now on, we will extract from reviews and articles all the facts about a product (omitting all opinions) and mail or fax them to the manufacturer for verification. Readers should expect our reviews to be as tough as ever, but should also see an even higher degree of accuracy.

Even if we achieve our goal of making *AmigaWorld* reviews and evaluations 100% factually correct, there is an element of opinion to every review. Just as Siskel & Ebert disagree, despite their wide knowledge of film, different people often disagree about a product. That is why the Your Turn comments and the BackTalk reactions are so important. They give readers a chance to second-guess our esteemed reviewers, and that is an opportunity worth taking.

Now, how about our new *Tech Journal*? Errors in *AmigaWorld* are bad enough, but errors in a technical product such as *The AmigaWorld Tech Journal* would be even worse.

To avoid this problem, we formed a Peer Review Board, consisting of top experts in their fields. So if we run an article on C, a couple of C gurus will review it before publication and give us their feedback.

We've got Andy Finkel, the man behind AmigaDos 2.0; Bryce Nesbitt, a Commodore programming ace; John Toebes, from SAS/Lattice; Jim Goodnow, of Zardoz Software; Joanne Dow, who is known to all BIX addicts; RJ Mical and Dale Luck from the original Amiga team; Keith Doyle from Right Answers Group; Scott Hood and Carolyn Scheppner from Commodore; key Video Toaster engineer and developer Brad Carvey; animation ace Leo Schwab; noted programming author Eugene Mortimore; Music-X programmer Dave "Talin" Joiner; Syndesis President John Foust; and VirusX (thank God for that!) creator Steve Tibbett. And more are on the way.

The first issue is just about done, and it—along with its disk—will be available March 19. Look for it at local computer and software dealers and at certain newsstands, or call 1-800-343-0728. The call's free, even if the publication isn't. ■



PRESENTING SCALA

Finally a Professional Presentation Software Package for the Amiga!

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Scala provides an easy to use interface where every selection is made through 'screen-buttons' labeled in plain language. The presentation system includes 8 disks. In addition to the main program, 5 consists of background art and 2 holds the fonts.

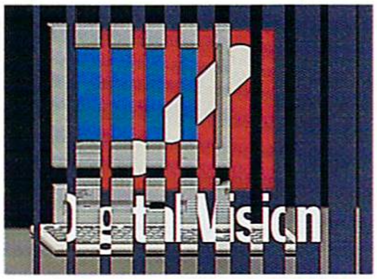


Backgrounds. A proper tapestry adds character to your presentation. The right choice of colors enhances the impact of great announcements.
Scala includes a wide range of backdrop images, among which you will certainly find one to suit your statements.
Also included is a set of 30+ palettes compatible with all the backgrounds.



Typography. A typeface adds voice to a text, the size adds volume. Supplied with Scala comes a line of classical, time proven and readable typefaces to suit any voice.
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Animation. Simple and to the point, an animation can be one of the most powerful presentation tool you can use. Scala loads and plays back animations with great ease and speed, and text can be added in a simple manner.



Transitions. They soften or accentuate changes. They divide scenes of a play. In your presentation, they can help to illustrate a point.
More than 70 are at your disposal for use on screens, objects and on lines of text.



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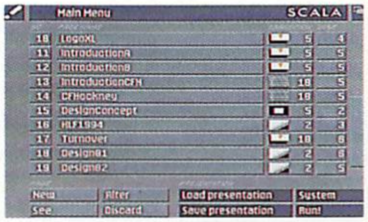
Other features. The layout of a screen can be saved. This can be used to ensure a consistent appearance every time. ASCII files can be loaded and formatted onto these pre-defined layouts, while maintaining the original attributes.

How you present is as essential as what you present. With a tool like Scala, we think this will remain true for a long time to come.

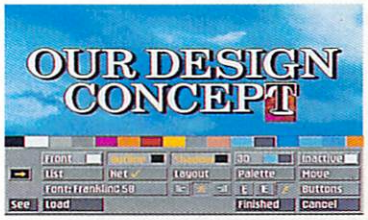
Scala represents the new generation of professional Amiga software due to it's excellent user interface and smooth performance.

Scala is designed in close co-operation with a number of users like you.

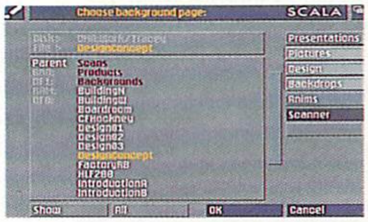
They include people working in sales organisations, graphic studios, advertising agencies, computer art, video studios, national broadcasting, home video, etc.



Scala's main menu. From this menu you control the sequence of pages, their transitions and display time. Presentations can be loaded and saved and new pages created.



Scala's text editing menu. All editing of text and symbols are controlled from this menu. Submenus include typography, color control, transitions and text import.



Scala's file requester. All background pictures and animations can be loaded from this menu. User defined buttons will direct you in selecting images of different themes.



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REPARTEE

Comments, complaints, and concerns

from AmigaWorld *readers.*

Mail Order Vs Dealers: Film at Eleven

I wish to make an "ethical" comment regarding Susan Kaniwec's December article on using mail order houses, "Dial M. . .For Mail Order."

While there is nothing unethical with employing the services of a mail order house, I believe there is a potential for misuse. Specifically, if one travels to a local Amiga dealer, uses *his* time and resources in previewing software or hardware, and then orders the product of interest from a mail order house, that, in my opinion, is tantamount to stealing.

I would encourage the Amiga community, which I know and love, to give the Amiga dealers their just due. After all, the dealers have that intrinsic need to buy "toys" for their Amigas just as much as we! (Not to mention lesser items such as food and housing!)

Mike Bellino
Allston, Massachusetts

Gavin McMillan's letter in the January issue brings up an important point. I recently bought an A3000 from a dealer in my area. This was the third machine I purchased from this dealer since 1986 (A1000, A2000, and A3000). When I asked him to install 2MB of RAM I had bought somewhere else, he went nuts! Rather than telling me there would be a service charge, he reprimanded me as if he were my father. This dealer is one of the least courteous and knowledgeable sales or service people I have ever encountered—in any field. I can see why Mr. McMillan prefers mail order. Frankly, I could care less if this type of dealer went under.

At another store, I was told that the A3000 was great because it had a '386 processor! An uninformed consumer might assume that the Amiga is just an IBM clone. If this salesman didn't even know what processor is in the machine, how can he convince a skeptical consumer that he might need or even want an Amiga? I wonder. . .is the service you get from most dealers better than no service at all?

Jason Goodman
Long Island, New York

A1000 and One

I am one of the fortunate people who jumped on the Amiga bandwagon when it first hit the market. I have not regretted my decison for a second.

However, I am also one of those people who has been left behind by Commodore. I still have my original A1000 and do not have the finances to upgrade. One of the more frustrating aspects of A1000 ownership is seeing all the new software and hardware for the A500/2000/2500/3000 and seldom seeing anything at all for the A1000.

Now I understand all about market dynamics and how companies are in business to make a buck. But I still find it hard to believe that I am the only A1000 owner left in the world and that there is virtually nothing left out there for me. Could you guys run an issue with articles addressed to the A1000 owners still in the world? For example, how about an article on using new peripherals (if any) in the A1000, or on ways of changing the A1000 to make this possible? Even better, how about a "where to find. . ." for the A1000? You could run down companies and outlets that still provide support and products.

This kind of universality would really add value to my *AmigaWorld* subscription, which right now is frankly a source of great frustration. It merely increases my sense of isolation from the Amiga community with each passing issue.

Bruce Cohen
Baltimore, Maryland

New World Concerns

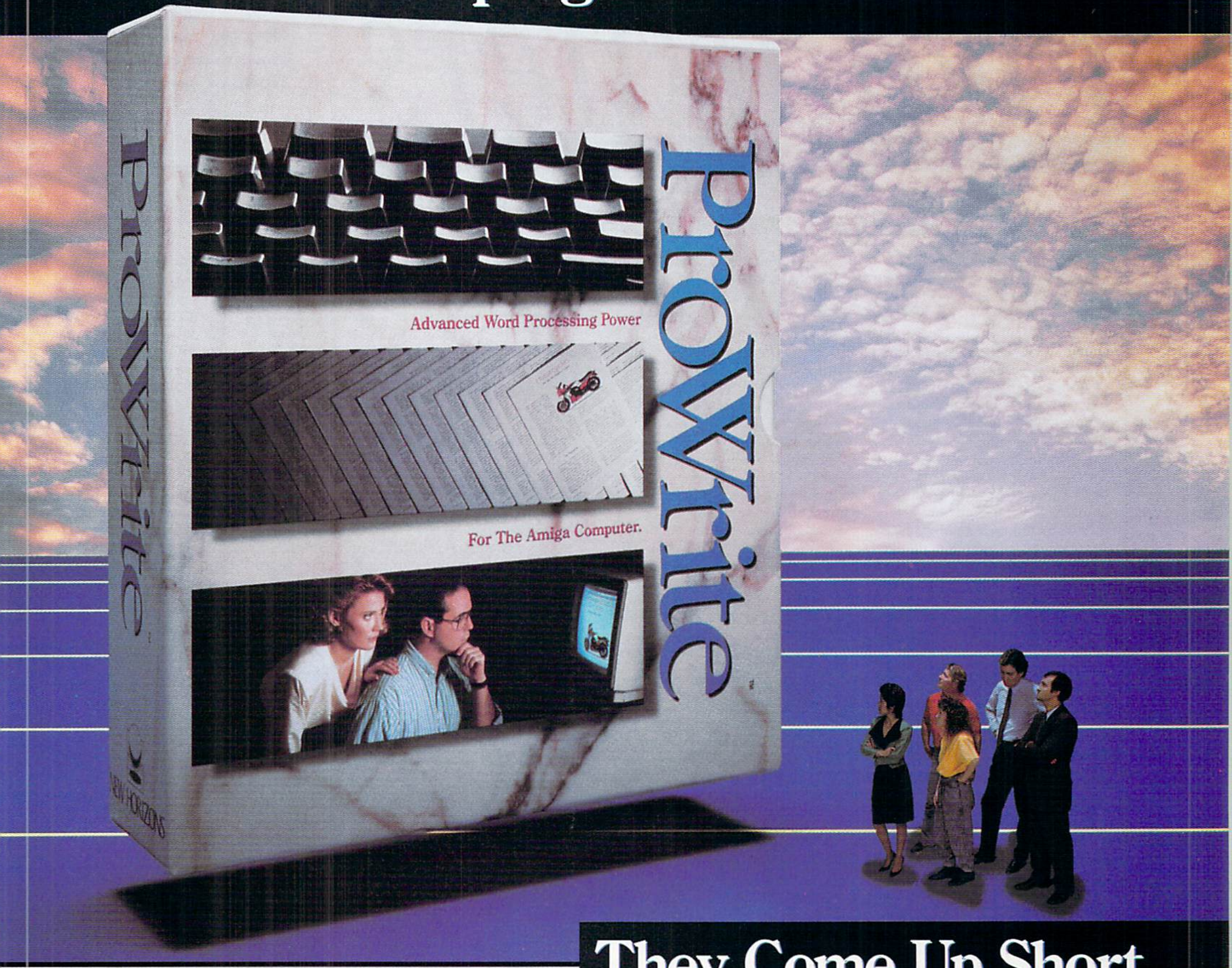
This is an open letter to manufacturers, purveyors, and end-users of computer-related goods. Having purchased many hardware and software items, there is one thing that disturbs me, and that is the effect of our buying habits on the environment. Now, the electronics industry is not in the position to offer biodegradable products, and recycling is not likely to happen beyond the garage-workshop hacker's realm. But surely something can be done about the *packaging*. You know—those ubiquitous styrofoam nuggets that constitute about 75% of a shipping box's volume. Styrofoam is one of the most persistent toxic substances. Please find something else—shredded or crumpled newspaper, foam-rubber scraps, or some other recyclable material.

The glitzy, excessive packaging that encases most software is another area that needs attention. I know that the bigger and flashier the trappings, the more likely a product is to catch the consumer's eye, but if we can prove to the retailing establishment that we are willing to consider an item for its intrinsic merit, then they might stop decking the stuff out like a Christmas tree. As a side benefit, production costs would be reduced.

Marilynn DeSilva
Willits, California

Send your letters to: Repartee, *AmigaWorld* Editorial, 80 Elm St., Peterborough, NH 03458. Letters may be edited for space and clarity. ■

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Headliners

NEWS FROM THE AMIGA COMMUNITY

Over two million sold! (See the report on the World of Amiga.)

World of Amiga Warms Up, Despite Chilly Weather

MISSISSAUGA, ONTARIO—A breakfast announcing the recent milestone sale of the two-millionth Amiga computer kicked off the World of Commodore-Amiga show. As usual, the event was held in suburban Toronto, and crowds of Amiga users took in displays of old, new, and "not ready until first/second/third/fourth quarter" products.

High-powered, low-cost hardware was the hit this year. GVP demonstrated its refined line of Impact A3001 upgrade kits for the A2000, including a **50-Mhz 68030**. A real show-stopper was the full-motion cartoon video, with sound, running in real time from a **Series II hard card** mounted in an *unaccelerated* A2000.

Not to be outdone, ICD raised eyebrows and stirred envy with its looping three-minute clip digitized from the film *Predator* (Twentieth Century Fox). It was composed of 48K HAM frames running at 24 frames-per-second with digitized sound, and many onlookers found it hard to believe that they were seeing video generated from an A2500 equipped with ICD's **AdSCSI 2000** controller and a 300MB hard disk and *not* from a laser-disc player.

The crowds at Pre'spect Techniques' booth were captivated by **revised software** for the company's ALF controllers, an exhaustive supply of **RAM cards, PC/XT and PC/AT emulators**, and an unusual collection of other European imports, including a **graphics tablet**, a **light pen**, and the **Vesuv Eprommer**, which allows you to burn your own code into ROM.

California Access brought a little sunshine to the frosty north with its **Bodega Bay** expansion console, which adds A2000-style slots, a 200-watt power supply, and a cooling fan to the A500. Among peripherals that fit into Bodega Bay are the company's **Malibu board**—a SCSI contoller sans drive—and the **Catalina card**, which attaches to the Malibu board to add two, four, or eight megabytes of RAM.

Commodore's large display gave show-goers a chance to see the **A3000UX**, a Unix-based version of the Amiga 3000. One wall was filled with **CDTV** units demonstrating applications and playing compact discs with +G graphics, while several demonstrations employing NewTek's **Video Toaster** also ran non-stop.

Software-wise, the show did not disappoint, either. In both the Commodore arena and their own booth, the Seven Seas Software folks wowed crowds with demonstrations of **MathVISION**. As it generated graphic displays of mathematical functions, MathVISION proved to be extraordinarily effective in mesmerizing all sorts of Amiga enthusiasts.

Lake Forest Logic proudly displayed its latest version of the macro assembler, **ADAPT**, and announced the release of its 4096-color hi-res graphics program, **Macro Paint**. Oxxi touted its soon-to-be-released **SpectraColor** HAM paint program with brush animation, and reported that it will soon be bundling its SoundMaster sound digitizer with the AudioMaster III sample editor.

Finally, Gold Disk demonstrated the long-awaited but not-quite-ready **ShowMaker** for the umpteenth time. The company also displayed final versions of its **HyperBook** information and presentation manager, as well as **TransWrite 2.0**, a replacement for its Transcript word processor. A 99%-complete version of **Professional Page 2.0** rounded out Gold Disk's display.

—TMW

The ADA President Speaks!

On its first birthday, the Amiga Developers' Association looks to the future.

MINNEAPOLIS—In March, 1990, the Amiga Developers' Association set out to develop a structure that would encompass many different developers and opinions. Now, as the ADA gets ready to elect its second set of officers and its board of directors, it is incumbent upon us to review the goals initially set forth and to analyze the results of our efforts.

Among our initial objectives was the creation of an environment wherein Commodore and the Amiga development community could better communicate. In the past several months, we have seen a direct increase in communications with CBM. Commodore Applications and Technical Support (CATS), for instance, is now taking an active role in helping developers learn more about doing business in the computer industry.

Another goal was to establish good communications between vendors and users. Through the efforts of the board, the PLink network has set up the ADA Zone and offered ADA members reduced rates, of which many have taken advantage. The ADA has been heard on many other fronts as well. AmiExpo, for example, enlisted the ADA to deliver keynote speeches at two recent trade shows. As a result of this exposure, many new members have joined the Association.

Lately, the ADA has begun to take very aggressive action against software thieves. Several pirating bulletin-board systems have been closed down, and an investigation is underway concerning an organization that has apparently been selling software illegally. The dues of ADA members have paid for this and other investigations.

Finally, through the lobbying efforts of several ADA members, coverage of the Amiga by media sources other than Commodore- and Amiga-centered publications has increased dramatically. This alone has been worth the development of the ADA.

Of course, there is always room for improvement and increased effectiveness. It is our sincere hope that the board and officers about to be elected will carry on and improve the foundation we have set. The future of the Amiga depends entirely on the development community and is as bright as we wish to make it.

—Michael Halvorson
ADA President

What's Hip?

LONDON, ENGLAND—What is going to happen at the Hippodrome on April 14? London's popular nightclub will be the site of the 1991 European Computer Leisure Awards ceremony. *AmigaWorld* has been invited to be the official US representative on the panel of judges, joining other publications from around the globe in selecting winners for 16 Amiga categories—11 for games and 5 for nongames.

The ceremony is part of the European Computer Trade Show, an important multiplatform event that runs April 14–16 at London's Business Design Centre.

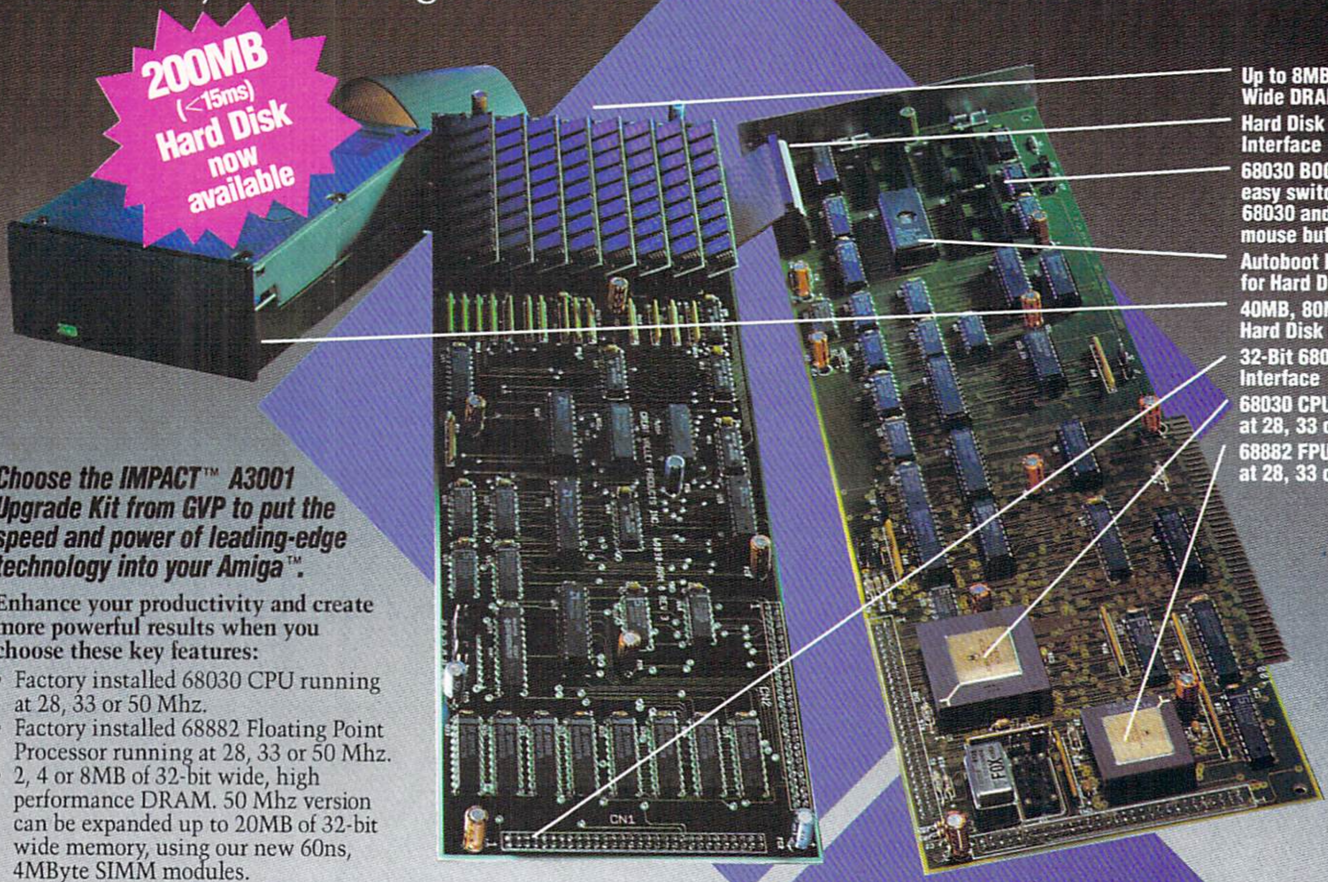
—BG

Headliners is compiled by Barbara Gefvert. Send your news bits to Headliners, *AmigaWorld* Editorial, 80 Elm St., Peterborough, NH 03458. ■

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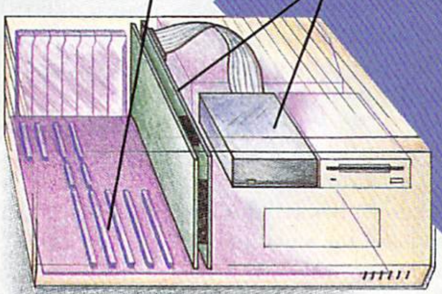
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Number of *Open* Amiga expansion slots with hard disk drive and 8MB *Fast* memory installed.	5	3	4
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REVIEWS

ELAN PERFORMER 2.0

Good show. . .even if you're from Missouri.

By Gary Ludwick

FOR SEVERAL YEARS, Elan Performer's ability to handle the wide range of Amiga graphic and animation formats made it the Amiga's premier graphics presentation program. Its ease of use, superb interface, and compatibility placed it a firm first in presentation software. When Zuma Group's TV*Show 2 (for a review, see Dec. '90, p. 29) came out gunning for the top position, Elan responded with version 2.0, an upgrade that gives TV*Show a run for its money.

Performer 2.0 retains all the powerful features that made the original 1.0 version the first Amiga slide-show program capable of producing truly interactive video presentations. By assigning images or animations to different Amiga keys, you can still construct presentations where sequencing and timing can be worked out in advance or synchronized on the fly in a "live" environment. The edit-controlling functions, the Frame-Cutter animation-editing facility, and the impressive array of timing, sequencing, and looping control features all carry over into version 2.0. Performer 1.0 users will not have to relearn a thing.

What makes Performer 2.0 different, then, are not revisions but additions to the original program. It now supports an even wider range of graphics/animation formats and standards. A new script generator provides a remarkably easy and efficient way to construct a prerecorded presentation. And Performer's new "Midi" program offers real music-video possibilities.

BEYOND RECOGNITION

Now, in addition to IFF, RIFF, ANIM, and HAM, Performer 2.0 accommodates Commodore's new 24-bit RGB24 standard and Impulse's RGB8 and RGBN formats by converting them into HAM. In addition, 2.0 supports Sculpts 4D's MOVIE animation format.

For use with RGB monitors or video projectors, the program now also provides an interlace off/on control. Additional enhancements to both animation control and editing heighten the upgrade's flexibility and range.

ARexx support is the key to many of Performer 2.0's new features and capabilities, because it can now both send and receive messages from other programs via an ARexx port. Two ARexx applications, Recorder and Midi, are included with the upgrade. (ARexx itself, however, is not included with Performer 2.0; you must purchase it separately.)

Recorder is a script generator that lets you record any sequence of imagery via your keyboard. When the resulting script is played back, it retains the order and timing of your manual input. In marked contrast to most other presentation programs, this is a completely transparent way of constructing a prerecorded program.

If you wish, Performer lets you load your images into RAM (contingent upon your system's limitations) before running the program to improve the smoothness and image of your timing speed. If your system does not have sufficient memory to make use of this latter feature, you can still take advantage of the Recorder's scripting method, because it can load and display images simultaneously, if necessary. Speed and smoothness, however, may suffer somewhat.

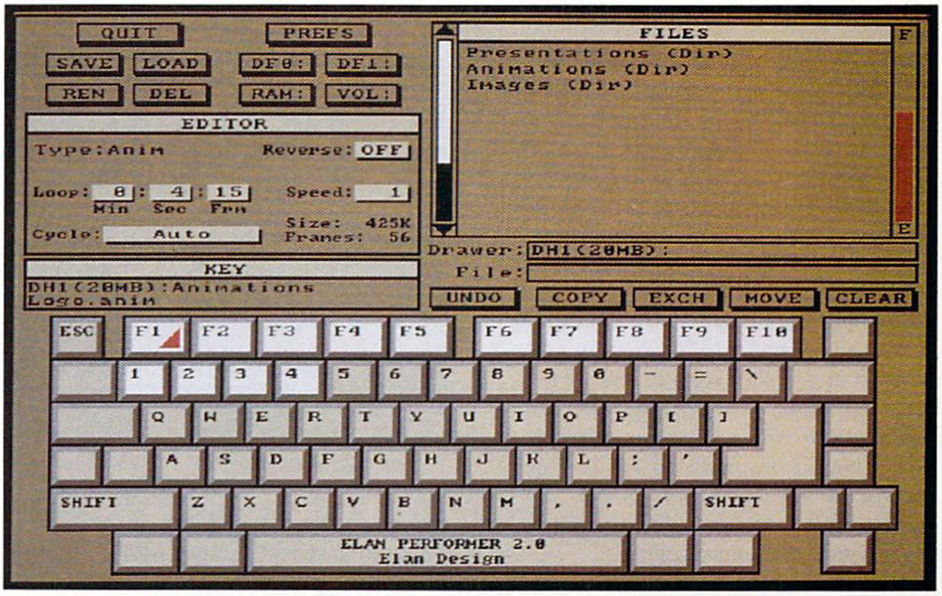
WHERE MIDI IS HEARD

Without doubt, the most dramatic addition to Performer 2.0 is Midi. With a MIDI interface, a sequencer, and an instrument in operation, Performer will "listen" for notes that you specify and react as if a key with its corresponding images had been pressed.

Performer's Midi program supports any or all of the 16 MIDI channels available. Because not all MIDI keyboards start with MIDI note 0, the program also provides key offsets that you define so that the keyboard's first (leftmost) key will correspond to F1 on the Amiga keyboard.

With a simple CLI command, such as MIDI ON 016ON c1,12, you can instruct Performer that your keyboard's first note is 16; that it is assigned to F1; and that Performer should listen for that note on channels 1 and 12. If Performer detects that note on those channels, it will send a message through ARexx to display the image assigned to the F1 key. Should it hear note 17, it will display the image assigned to F2, and so on.

What all this means is that Performer now offers the potential for creating a video presentation synchronized to a music track. Don't think this is going to be a snap, however. It takes a lot of practice to sync a video presentation to music. Part of the problem lies with ARexx's delay in passing messages through to Performer. To compensate, you can use a MIDI sequencer to advance the image track or slightly delay the music track. Another difficulty is that different resolutions and animation formats tend to have different delay times, thus further complicating the process. Once you work out these kinks, however,



Elan Performer shows you how to get it together.

the results of setting music to your video program will be really impressive.

In the presentation-program battle, Performer 2.0 may be narrowly back on top. It still doesn't offer any transition effects as does TV*Show 2; if it did, it would immediately become the ultimate image-presentation system. It would be a mistake, however, to sacrifice any part of Performer's ease-of-use or interface to achieve those effects. Performer's real attractiveness has always been in its simplicity, now enhanced by its transparent "recording" scripting process and musical abilities via ARexx and MIDI.

TV*Show 2 and Performer 2.0, each with its own set of strengths and weaknesses, actually complement each other well. From a professional user's point of view, I need them both—although if truth be told, Performer 2.0 is my day-in and day-out workhorse choice. If you can afford only one image-presentation program, you will ride high in the saddle with Elan Performer 2.0.

Elan Performer 2.0
Elan Design Inc.
Box 31725
San Francisco, CA 94131
415/359-7212
$149
512K minimum; 2 drives

AudioMaster III

Even more of a good thing.

By Michael Hanish

AUDIOMASTER III, THE latest incarnation of Oxxi's venerable sound-sampling and editing program, allows you to handle virtually any sampling task with style and ease. It accepts data from an expanded repertoire of sampling hardware and offers some powerful features in the waveform-tuning department. In addition, Oxxi topped off the upgrade with higher digital-sampling rates, loop sequencing, special effects, and some extra, special software tools.

For starters, now that it supports all versions of PerfectSound (SunRize Industries), AudioMaster III provides software control for just about every parallel or mouse-port hardware sampling device. As in previous versions, AudioMaster III accepts input from FutureSound (Applied Visions), SoundScape (Mimetics), MasterSound (Microdeal), A.M.A.S. (Microdeal), StarSound (Datel), and Perfect Sound (SunRize). Through buttons found in the Sampler Configuration window, you can now make adjustments within the software to get the most out of each device.

As with its predecessor, AudioMaster III's controls within the Digital Sampler Requester let you allocate a sample's memory, set its sampling rate, enable voice-activated recording (the level at which an incoming signal starts the sampling process), and monitor the levels of the incoming signal. The program provides a small oscilloscope window for monitoring signal output, although there are no software-based level controls for this purpose. You must set these either at the sound source or with the sampler hardware.

Once all the levels are set, you initiate the sampling process by double-clicking on the control screen, or by audible command if the sampler is set to voice-activate. You can pause the recording process temporarily by pressing the right mouse button. The program automatically fills up the allocated memory space with the sample and returns to the control screen.

This Is Ground Control

Two-thirds of the main control panel is now a large oscilloscope display, with two horizontal "zero" lines for stereo, or one for mono. This large scope display sets a standard for clarity. It shows waveforms in pale green on a black background, and you can place loop markers—vertical yellow lines—within the waveform to indicate which portions you want repeated throughout the score. Setting loop points is essential for many instrumental sounds, particularly brass and wind instruments. A small box in the upper-right corner shows either the size of the sample in bytes or the cursor's current position—depending on which you find to be most useful.

The remaining portion of the main screen is devoted to the playback controls. With these, you can adjust volume levels, zero and loop, and range and zoom. Stop and start buttons let you play back all or part of the waveform. Most of the editing functions are active only when you select a specific section of the waveform as a range.

To set a range, point the cursor at a ►

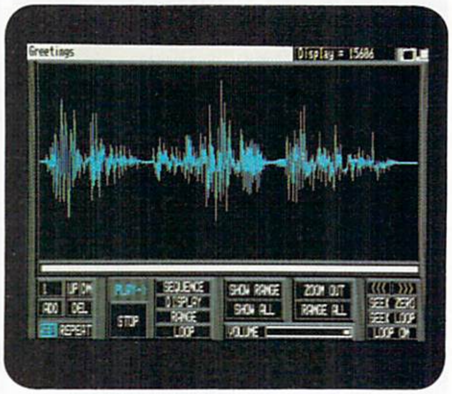
spot, hold down the left mouse button, and drag to the right; this area can then be cut or copied to an edit buffer. You can paste this range back into any spot in the waveform, zoom in closer for greater detail, invert or reverse its order, and increase or decrease the volume. You can even edit the range freehand by using the cursor as a drawing tool. Mix what you placed in the edit buffer back in with the displayed waveform in any position and at any volume level. The program allows you to apply echo and flange effects with a fair amount of precision. There is no provision for adding reverberation to a sound, however; this quality must be present in the original input signal during sampling.

Sing Along with Pitch

Two of AudioMaster III's most powerful features are found within the Tune Waveform Requester. While not necessarily important when creating sound effects, pitch considerations are crucial with melodies or harmonies. The pitch of any sampled sound depends on the rate at which it is played back; the faster the play-back rate, the higher the pitch. With the Tune Waveform Requester, you can tune a sample precisely to a standard pitch—and even change the octave—so that all the notes will play back in tune (if that is your objective). Most music programs utilizing sampled sounds require a play-back rate of 8363 samples per second (sps). AudioMaster III's Resample feature lets you adjust to 8363 sps any samples that were originally tuned at some other rate, with no loss of tone or fidelity. This process also offers an extra benefit: Lower sample rates require less memory.

You can also use AudioMaster III to add real-time echo, delay, or flange to a signal coming into the hardware sampler. These effects are not recorded; they are simply passed straight through to the Amiga's audio-out ports.

The upgrade's most notable and useful feature is the ability to build sequences from a single sample. These can be thought of as multiple loops within loops—up to 999 for any given sample. When you set loop points for each section, the sequence plays back the loops in sequential order. With this feature, you can create all sorts of wild effects and long pieces of continuous music



If it sounds good, play it!

from a relatively small sample.

AudioMaster III comes with a number of "bonus" programs, as well. With them, you can build multioctave instruments out of several separate samples or turn two mono samples into stereo. In addition, you get real-time oscilloscope that helps you with bias calibration of parallel-port samplers and a stand-alone CD-player simulator that allows you to load and play up to 20 background sequences or samples while other programs run.

AudioMaster III is not copy-protected, comes on one non-bootable disk, with a second disk of examples and extra programs, uses memory very efficiently, and loads and works quickly. A solid and trustworthy program, AudioMaster III continues the tradition of its predecessors—at a bargain price.

AUDIOMASTER III
Oxxi Inc.
PO Box 90309
Long Beach, CA 90809
213/427-1227
$99.95
No special requirements.

A-Max II

Put 'er there, Mac.

By Steve Peterson

READYSOFT'S FIRST MACINTOSH emulator, which essentially turned your Amiga into a Macintosh Plus (in fact, a slightly faster Mac Plus), was very successful, thanks to excellent software compatibility. There were some problems, however. The original A-Max had difficulties with software that talked directly to Macintosh hardware. It could not handle digitized sounds and provided only limited and awkward file-transfer capabilities. Worst of all, A-Max could not recognize a Macintosh-format hard-disk drive—meaning you could run your software only from floppies.

Apparently, ReadySoft listens to its customers, because A-Max II addresses most of these problems. Its most important new feature is hard-disk support. Running Macintosh software from floppies is difficult and in some cases (such as PageMaker 4.0) downright impossible. A-Max now supports most Amiga hard-disk controllers, including those from Commodore, GVP, ICD, IVS, Xetec, Supra and California Access, with its forthcoming Malibu card. You will need to create a Macintosh-formatted partition on your hard drive; your installation software will determine how difficult a task this may prove.

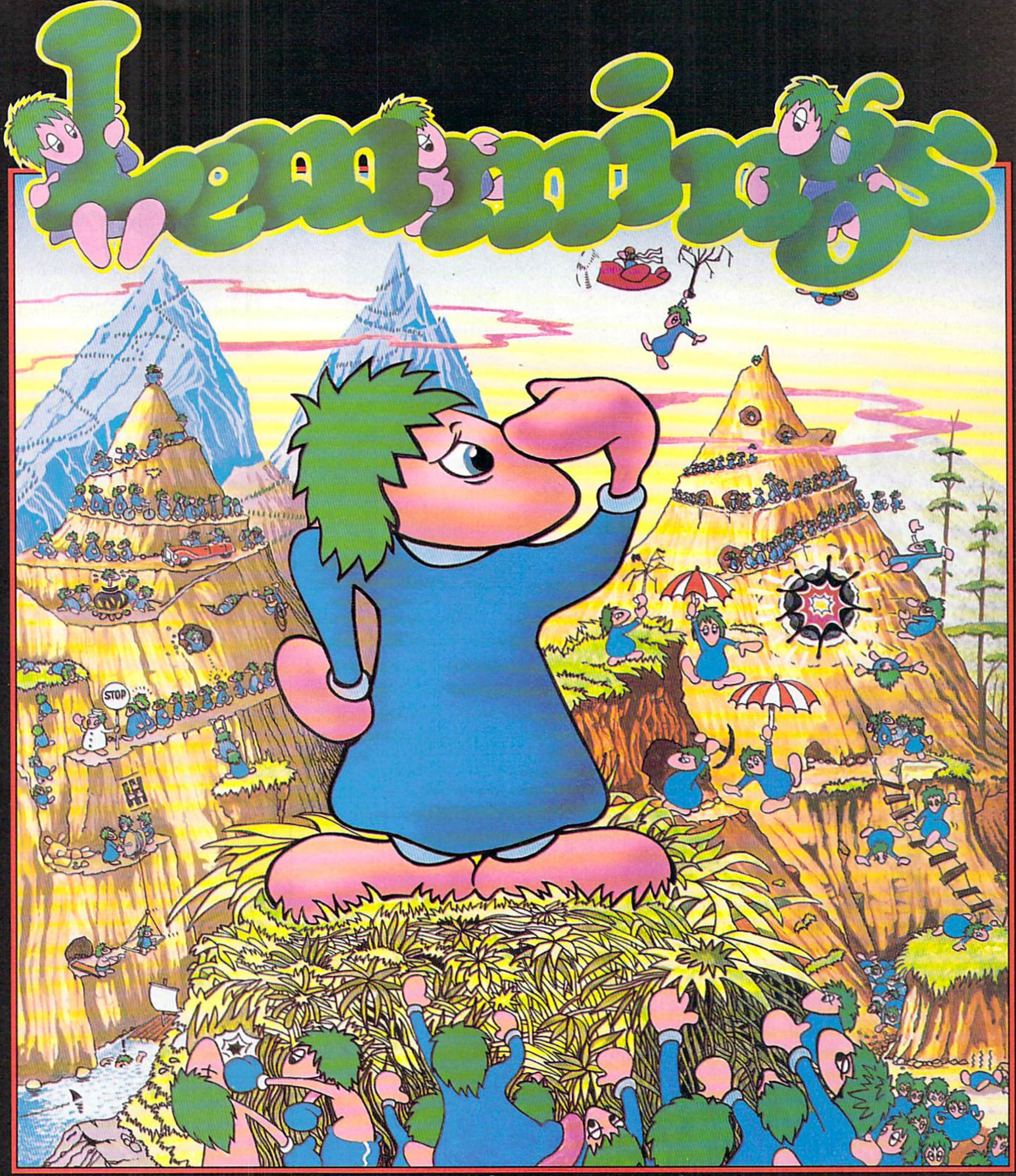
YOUR TURN!

I've been using A-Max II since it came out, and I like it. . .but there are problems. The biggest problem concerns printing. A-Max I worked well with Mac Print and my Laser Jet IIP. A-Max II, however, produces a page cluttered with stray lines and characters. I am expecting the "official upgrade" any day now from ReadySoft. Maybe Commodore should bundle A-Max II with every Amiga, since the Amiga is the only computer that can be configured to run Mac and IBM software as well as its own.

Mark Adams
New York, New York

If you have the extra money, buy a Macintosh SCSI hard drive and plug it into your controller's SCSI port. This will give you more room for your Amiga programs. A-Max II even supports other Macintosh SCSI devices such as scanners and laser printers.

A-Max II also offers full support for Macintosh digitized sounds. In addition, it sports an improved file-transfer program that provides for better conversion between Macintosh and Amiga files. For ►



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instance, you can now convert between IFF and MacPaint formats. ReadySoft promises even more capabilities with its upcoming A-Max II Plus internal card. This new upgrade reportedly will provide AppleTalk ports and turn internal Amiga floppy drives into Macintosh-compatible drives—solving most of the few remaining complaints I have.

ROMBO

Like its predecessor, A-Max II consists of a hardware module that plugs into the external disk-drive port in the back of your Amiga. Unlike the original, however, A-Max II will not function with Mac 64K ROMs, so you must acquire a set of Macintosh 128K ROMs (about $125) from a dealer.

> **YOUR TURN!**
>
> The best emulators are the launch-and-forget kind; you should be able to turn them on, wait for the emulation to kick in, and then work normally as if you had that hardware. A-Max fulfills that requirement. There is, however, a serious problem with printing through the parallel port, and I am still waiting for ReadySoft's answer.
>
> ***Daniel Loebl***
> *Madison, Wisconsin*

Once you have inserted your Mac ROMs in the hardware module (a simple plug-in procedure), A-Max II is ready for installation. The system provides for an external Amiga floppy drive as well as a Mac-compatible $3\frac{1}{2}$-inch disk drive. (Important for easy file transfers, such Mac-compatible drives sell for about $150.) Once you have attached the floppy drives, turn on your Amiga and start the A-Max II software. A-Max takes over your entire Amiga system, which means that the only multitasking allowed while you are in A-Max emulation is the limited version provided by Apple's MultiFinder system software.

A-Max II's opening screen gives you a number of configuration options, including 512 × 342 (the standard Macintosh Plus screen) and 640 × 400, as well as 672 × 460 if you use the Amiga's overscan capability (my personal favorite). If you have an A3000 or a flickerFixer



A-Max II's opening screen, with new options.

(MicroWay), you are blessed with flicker-free interlaced display. Otherwise, you can choose a 640 × 400 interlaced display and deal with flicker, or a 640 × 200 noninterlaced display that reduces flicker—although A-Max will then display only half of the 640 × 400 page. Scrolling up and down, or skipping back and forth between the two halves is, however, very quick and easy.

I have found some solutions to the flicker problem that do not involve an extra hardware expense. You can reduce it significantly if you turn down the brightness and contrast somewhat. Also, try setting your Macintosh desktop screen to all black. A variety of Mac shareware programs provide another solution. Most flicker on Macintosh screens is caused by the alternating one-pixel-thick black and white lines at the top of any window. Several programs—including NeVR, WindChooser, and Following—change the appearance of the window tops to gray bars. You can find these in shareware collections or through on-line services such as GEnie or CompuServe.

Other configuration options let you designate which port (serial or parallel) the printer is to use, determine memory usage and RAM-disk size, and decide whether or not to use KickStart RAM. ReadySoft arranged A-Max II's controls more sensibly this time around; now you can determine RAM-disk size and memory usage independently. In the previous version, once you apportioned your memory so as to best enhance compatibility with your favorite Mac programs, A-Max automatically set up all remaining memory as a recoverable RAM disk.

A-Max requires Apple's system software to run. Some Mac applications packages include such software, which would save you the $49 cost of buying the system software from an Apple dealer. When your options are set, you can save the settings and begin Macintosh emulation.

In any case, you will need either a Mac-compatible disk drive or access to a Macintosh to move the system software over to an A-Max-format disk. (While A-Max format is similar to Macintosh format, neither a Macintosh nor an Amiga in normal mode can read A-Max format disks. Only an Amiga in A-Max mode can do so.)

Once you have your system software, you are ready to roll. I tested A-Max II with a variety of Macintosh programs with excellent results. The latest versions

> **YOUR TURN!**
>
> I have had excellent performance with the A-Max driving an Imagewriter II printer, and the larger screen size of the 1950 allows me to be more productive than on the Macs I have used in the past. I hope Apple's nasty new policy of not selling ROM chips does not doom A-Max II to failure!
>
> ***Jeff Ingraham***
> *Omaha, Nebraska*

of Microsoft Excel (2.2a) and Word (4.0) work just fine, as does HyperCard 2.0, Studio/1, and SuperPaint. Compatibility problems cropped up with some of the older software packages, but, in all fairness, most of these packages will not even work with the newer Macintoshes.

Beside the fact that A-Max does not support color, the major drawback to A-Max II may be future availability of the Macintosh ROMs. Apple no longer makes 128K ROMs and no longer sells existing sets to dealers without receiving a damaged set of ROMs in exchange. If ReadySoft can adapt future releases of A-Max to support new versions of the Mac ROMs, it will prevent it from becoming obsolete.

At present, A-Max II is still an excellent value for anyone who needs to run Macintosh software. It is certainly cheaper than the most inexpensive Mac, and you do not have to give up your Amiga. For those with more powerful ►

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YOUR TURN!

I just received my A-Max II upgrade and am really pleased with it. It works well with my Xetec hard drive. I did have one problem—a system crash—when adjusting memory on the startup screen. The other thing that bothers me is that all my Preference choices disappear after closing a window.

John Glaser
Tucson, Arizona

systems (hard disks, 68020 or 68030 processors, A2024 monitors, and so forth), A-Max II provides very high-performance Macintosh emulation at a fraction of the cost of the expensive Macintosh II computers.

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FractalPro
MathVISION

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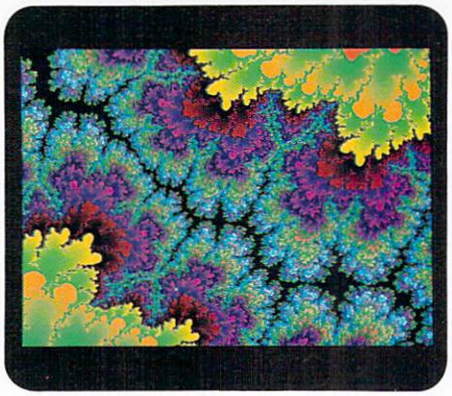
By Otto von Ruggins

FractalPro

FRACTALPRO IS ACTUALLY two programs in one. Originally sold separately as HAMandel and AutoMag, this two-disk update packs some eye-catching Mandelbrot and Julia Set generating features not available anywhere else. Initially, the program produces a variety of fractal images in HAM mode (in this case, a 320 × 400 interlace screen with 256 colors). For the uninitiated, fractals are a sort of oddball of geometry—mathematically calculated images that occupy "spaces" between whole-number dimensions.

The HAMandel module (available separately as HAMandel3.0 for $49.95) comes with ten pictures on disk for use as starting points. The program can be run either by clicking on the HAMandel icon or by keying in a set of coordinates from the CLI. Once you are presented with an image on screen, your most likely choice of options is to zoom in to an area of the screen. This is done by selecting Zoom and specifying the depth via a submenu choice (1 ×, 2 ×, 4 ×, 8 × or 16 ×). The highest zoom selection (16 ×) magnifies the smallest selected section of the screen.

Initial zooms are rendered relatively fast, but as you go deeper into the image, the calculations slow down the rendering, making the program an ideal candidate for an accelerator board.



Mod math with FractalPro.

Amazingly, the program does not use floating-point math, so that a 68881 or 68882 math coprocessor does nothing to speed up the rendering time. The presence of 32-bit RAM, however, will accelerate things for you.

Once you find yourself in a region that visually appeals to you, select Color Cycling to enhance the view. This operation lasts only about 15 seconds (longer if you hit the Color-Cycling key repeatedly), but it provides some insight into the greater possibilities available by saving and loading these images into an animation program. For example, by using ANIMagic (Aegis/Oxxi) or Animation Station (Progressive Peripherals), you can change palettes and specify color-cycling ranges to put together a really fantastic display.

Other options within HAMandel allow you to produce different colored variations of the same fractal. For instance, you can alter the blue default setting to red or green, or add other colors through the program's Palette option. Depending upon your location, however, some of the 16 colors displayed in the palette may change the colors in your image. By switching among Mandelbrot, Julia, and two other modes, you can also display different renderings of the same coordinates. You can zoom in and out of the image as you wish.

When you feel satisfied with an image, be sure to save it before you change your zoom setting (or at least toggle back to the Workbench screen and write down the X, Y, and W coordinates displayed at the bottom). Remember to toggle the title bar off prior to saving, or it will be saved along with the image. When you save an image, the program creates a companion XYW text file, storing the image's coordinates.

The AutoMag Module

After you find some satisfying locations, you are ready for AutoMag. The AutoMag module allows you to move up, down, left, or right, to zoom in or out (when possible), and to save each subsequent image automatically. You can direct your animation by selecting the next move while the current image is rendering. Moving up, down or to the left allows an image to be drawn quickly, because only a small part of the screen needs redrawing. Zooming in or out, or moving right, however, requires redrawing an entire screen.

Running on its own for a few days, AutoMag produced over 300 numbered images, taking up 16MB on my hard drive. (The program multitasks, so you can still do other things while it is rendering images.) The program's MAKEANIMS utility compressed them into a 9MB animation.

Using the DISKANIM utility in Mindscape's TASS, I was able to play my ANIM directly from the hard drive by individually loading and displaying each frame in rapid succession. This was a bit jumpy, so I used Animation Station's SPLITANIM utility to break it down into three 3MB segments. This resulted in much smoother playback, because my system is limited to 5MB of 16-bit memory. Spreading the colors between different palettes created at different frame locations produced a stunning color-cycling effect. ►

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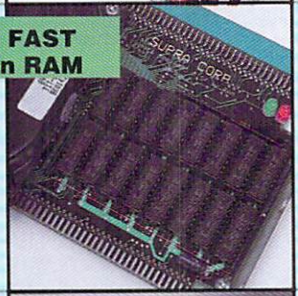


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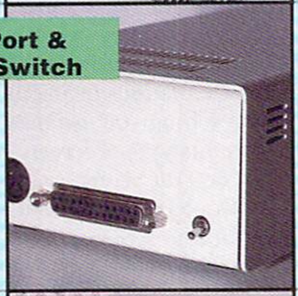
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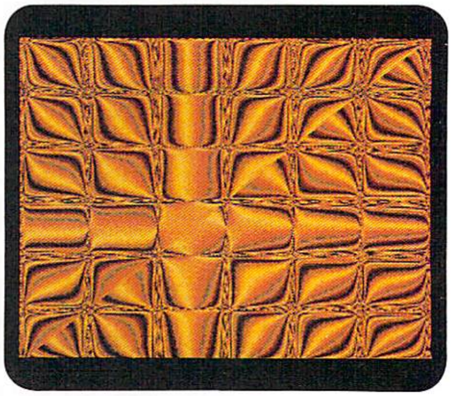
While these images are beautiful to behold, you may be wondering what else you can do with them. For starters, you can use them to make brushes for HAM paint programs such as Photon Paint 2.0 (MicroIllusions) and Digi-Paint 3 (NewTek), and as input pictures for Turbo Silver (Impulse) or Sculpt4D (Byte-by-Byte). Unfortunately, the FractalPro programs do not support overscan for use in video.

Anyone can enjoy the pleasure of seeing such colorful displays generated, even on an Amiga 500 with 512K, but FractalPro's depths are best navigated by those having power systems with multi-megabyte hard drives, accelerator boards, and lots of extra memory.

MathVISION

FOR THOSE OF us who have patiently awaited Seven Seas Software's next incarnation of the ever-popular fractal generator, Doug's Math Aquarium (DMA), we need pine no longer: MathVISION successfully fulfills our hopes and more.

One of DMA'a most visually seductive features is color cycling. Unfortunately, the color-cycling settings for DMA pictures are lost when such pictures are loaded into other programs for viewing. Trying to recapture the "cycling feel" in such a case proves to be a tedious and fruitless venture. MathVISION, on the other hand, not only retains color cycling for use in other programs, but also supports HAM and Overscan. Another outstanding holdover from DMA, the Color gadget, offers two schemes: Red-Green-Blue (RGB) and Hue-Value-Saturation (HVS), which can be used to manipulate the palette in either sweeping mouse motions or precise cursor strokes, thus letting you instantly create various permutations of screen images.



Tufted Gold, spun from MathVISION's equations.

The Edit Screen (a descendant of DMA's Numerical Swamp), converts your input into screen output. By specifying XMIN, XMAX, YMIN and YMAX, you set the dimensions of your image. The next thing you need to do is enter a mathematical formula on the VAL line, such as fa3(x,y,51), and define a series of functions (FA to FI) below. While it helps to be mathematically intuitive here, it is still possible to create stimulating visions by merely zooming in on existing Pics or loading functions from other Pics to the coordinates of a previously loaded picture. DMA's library disk, Secrets of an Artist, provides some excellent images to

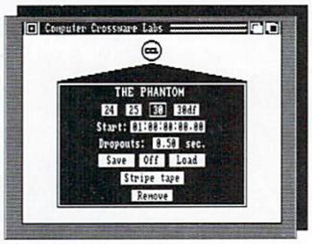
Continued on p. 94.

SYNC IT

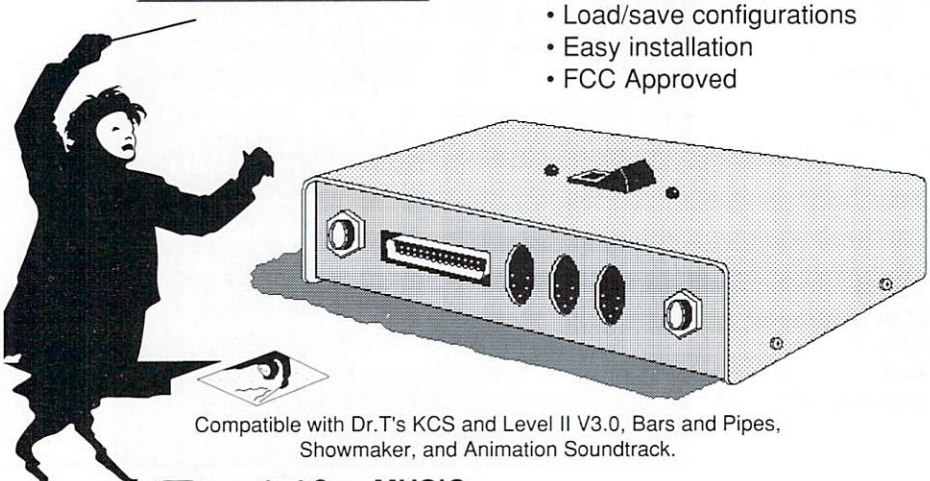
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The *AW* User's Guide To

Amiga 3-D *Software*

THINK OF THIS exercise as a very hands-on survey of the best and the brightest in Amiga 3-D software. Some of the programs are brand new; others have passed a critical test of proven results over a period of time. We've put together a faculty of Amiga artists and graphics experts to give their findings on what seven leading Amiga 3-D programs do best—whether in modeling, rendering, animation, or any combination of the three.

Our specialists aren't going to run down lists of features in the program documentation. They won't tell you that their individual packages are the "be-all and end-all" of 3-D graphics. What they will do is focus on a particular strength of a program, each with an expert's eye towards tips and techniques that can help you get the most out of that piece of software.

We think our 3-D graphics syllabus makes for good reading. We hope that it will spur you on to take advantage of what is a pretty impressive array of tools you won't find on just any run-of-the-mill computer platform. So check out the course list below and get with the program!

—Dan Sullivan

- ***3D Professional*** — John Foust
- ***Turbo Silver SV*** — Brad Schenck
- ***Sculpt-Animate 4D*** — Kelly Day
- ***LightWave 3D*** — Joel Tessler
- ***Imagine*** — Louis Markoya
- ***Animation:Journeyman*** — Greg Rostami
- ***PageRender3D*** — Phil Fitzpatrick

►

Crayons are for kids, right? But those big, fat, wrap-your-hands-around-them traditional kindergarten tools shown below (Amiga-generated, of course!) are a come-on. Let's go to school with the experts on seven Amiga 3-D graphics programs to see what makes each one shine.



ILLUSTRATION BY DON WHITAKER

3D Professional

Heavy on the Metal

WHILE MANY 3-D aficionados would like to reproduce the look of chrome letters and other metallic effects as seen in television advertising, they will often find it a difficult trick to pull off in practice. Fortunately, Progressive Peripherals' **3D Professional** ($499.95) sports one of the easiest interfaces for setting metallic textures. While this makes it a better choice than many other programs for this purpose, you can learn to create realistic metal objects in any 3-D program by exploiting a few key illusions about the mind's perception of metallic textures.

What makes chrome look like chrome? Shiny metals have little color of their own, but instead reflect the colors around them. A commercial artist may sometimes produce a "chrome" look by drawing the imagined reflection of ground stretching out to a distant horizon—even if that landscape has nothing to do with the scene in the rest of the ad.

The artist divides the object into two parts. The lower half shows the imaginary reflection of the ground color, darkening as it recedes into the distance, while the top half shows a reflected sky, fading from dark blue at the topmost part of the object to a lighter blue towards the imaginary horizon.

'Shady' Shading—Made Easy!

3D Pro's Use Horizon Shading option in the Edit Object requester performs a similar effect, without your having to perform any shenanigans of your own. The reflected ground is always brown, and the sky fades from dark to light blue. When a polygon points upward into the sky, it takes on a shade of blue. When it points downward, it takes on the ground color.

Even though these reflections might not represent the scene around the object, your mind is fooled into thinking the object is shiny metal. In the sample illustration, the letters "RKO" demonstrate 3D Pro's artificial chrome effect. Choosing such predefined textures as Chrome or Steel can heighten the effect.

Your choice of rendering mode can affect this metallic appearance, too. Gouraud shading gives objects a more dull appearance, while Phong shading provides the metallic glints of light associated with shiny objects. In an animation, moving a light around in the scene will change the illumination and reflection across the face of an object, again heightening the metallic appearance.

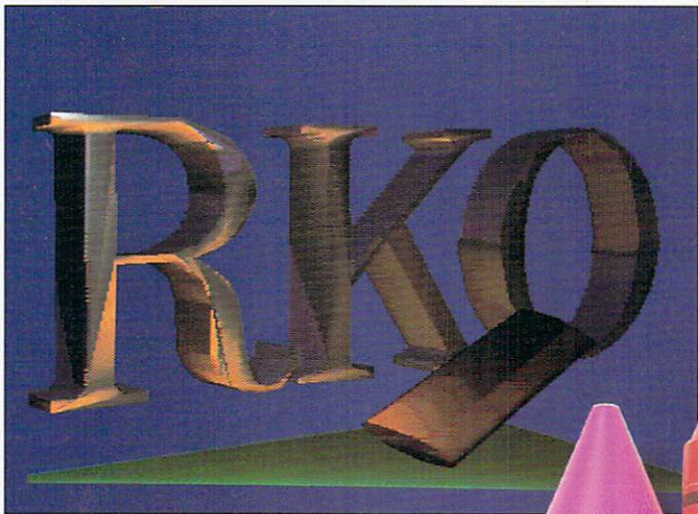
The choice of object colors can also add to the illusion of metal. For example, light grays and bluish grays resemble steel and other iron-based metals. Here in the present illustration, however, I did the brassy tube in a 3D Pro direct color of brown and used the preset values for Steel. I employed two lights to illuminate both objects in a nonuniform fashion, providing the glints and highlights.

To achieve the best antialiasing, always turn on the 3 × 3 filter from the Image Fltr submenu found under the Tech menu. This smooths the transitions between the object and the background colors. Without it, stair-steps of pixels appear along the edges of the object.

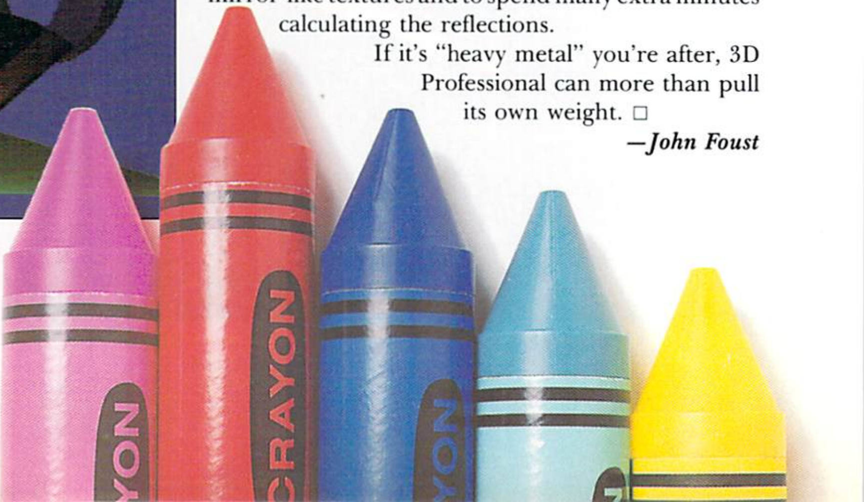
These simple techniques should make it easier to create realistic metal-like objects in 3D Pro. Using the artificial horizon shading will save a great deal of time when it comes to rendering a scene. Other 3-D programs require you to make objects with actual mirror-like textures and to spend many extra minutes calculating the reflections.

If it's "heavy metal" you're after, 3D Professional can more than pull its own weight. □

—John Foust



Horizon shading, rendering mode, object color, and lighting all contribute to creating the "chrome look" possible with 3D Professional.





Turbo Silver 3.0 SV

Success "Stories"

WHILE THE NEW Impulse graphics package, Imagine (also covered in this article), may carry the company's standard in the future, the same group's trusty **Turbo Silver 3.0 SV**, is still one of the best and most widely used programs in the 3-D field. (Note that Turbo Silver 3.0 SV is now available only as a $30 upgrade to owners of previous versions.)

Turbo Silver is a solid modeling and ray-tracing program with capabilities for animation. Its renderings are among the best produced on the Amiga. Its "Story" functions for extruding and animating are excellent, and its ability to perform image wraps and volumetric texture maps, coupled with very sophisticated control over surface properties, have made it a tool of choice among Amiga artists. The 3.0 SV upgrade added new textures, some interface improvements, and support for stereo 3-D rendering.

We will begin with some basic tips and then move up to a couple of specific Silver techniques on rendering and animation.

First, keep in mind that small objects take more time to render. To get around this, you should always make the elements of your scene as large as Silver's World Size will allow.

Using Silver's brush wraps can consume your system's memory quickly. Naturally, the smaller you make the brush, the less RAM you will use in mapping it onto objects. You can economize by using the same brush on several different objects. Even better, note that a number of interesting effects do not require very large or complex brushes. For example, you can easily create a pattern of parallel stripes with a brush only a single-pixel wide mapped straight "up" through a flat surface. As long as you size and position the object axis (which controls the size of the brush as it is mapped into place) so that this narrow brush encompasses the object, the entire surface will be covered with stripes. I have used this technique and similar ones very effectively in a variety of situations, such as creating "wallpaper" on a wall.

Excuse the Extrusion

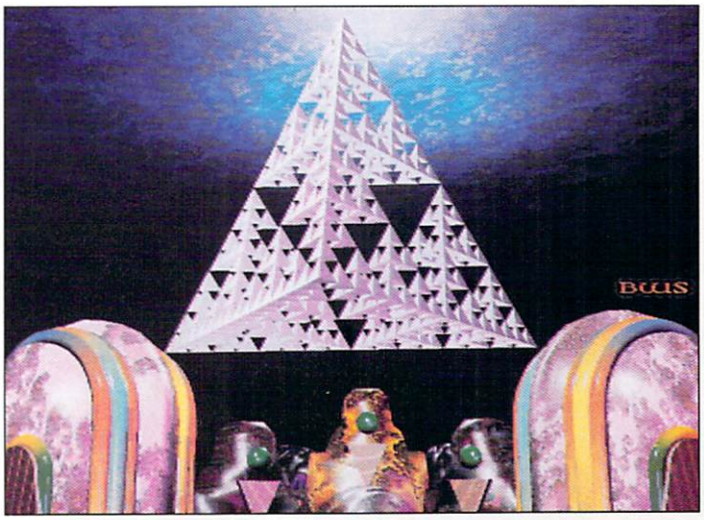
Silver's Story functions, Mold-by-Story and Animation-by-Story, constitute a uniquely interesting feature of both the Object Editor and the Animation module, respectively. Extrusions "by Story" demonstrate one of the most powerful parts of Silver's modeling environment. In a previous *AmigaWorld* article focusing on how to work with Silver's Object Editor (see "Object Lessons," Jul. '90, p. 30), I experimented with extrusions along paths in creating a Möbius strip. I then found another interesting trick you can do with this type of extrusion.

While following a path, an object may be scaled or rotated in any dimension. Wanting to create a hollow carved sphere to use in an animation, I discovered I could create a path consisting of only one point (i.e., a path that is traveled instantly) and scale my object, say, to eighty per cent of its original size as it was extruded along that path.

I began with a simple sphere and cut faces out of it to create a pattern. I created my one-point path object and then a Story that made the hollow sphere follow that path while it was being reduced in size. Because the sphere's axis was placed precisely in its center, I wound up with the same cut-out pattern on a hollow sphere with thickness—exactly what I was looking for. Had the axis been off center, however, the object would have been extruded eccentrically—which would have presented another interesting possibility to work with.

These are just a few of many tricks that Silver enthusiasts like myself have developed over time. I urge you to contact other Silver devotees who are willing to share their knowledge by writing the Turbo Silver Users Group, c/o Victor Osaka, 1341 Ocean Ave. #349, Santa Monica, CA 90401. □

—Bradley W. Schenck ►



In the rendering of the 3-D Sierpinski gasket in the illustration above, several IFF maps and textures were used to enrich the appearance of the surfaces.

Sculpt-Animate 4D

Hot-Key Helpers

WHILE BYTE BY BYTE'S **Sculpt-Animate 4D** ($499.95; "Jr." version, $149.95) may not be the best rendering tool on the market, I think it is in many ways the best program on the Amiga for modeling and for many types of animation. What I like most about Sculpt is that it is designed for artists who like to move things around until they "look" right, instead of for more calculation-minded people who like to move things around by the numbers until they are "mathematically" right (which, in my view, often winds up looking a little stiff).

With that in mind, one of the more useful suggestions I can offer you as a Sculpt user is to design your own "startup.script" with your own set of user-defined "hot-keys." My friend Steve Segal (known for his "Dance of the Stumblers") and I have a lot of fun customizing our own keys, frequently sharing our new key ideas. To help you get started, I would like to do the same with you.

Using hot-keys to replace the menu commands puts you in the proper position for doing your modeling. Having one hand on the mouse and the other on the keyboard allows you to keep your eyes fixed on your model so that you won't lose track of where you are or what you are doing (particularly important when working in three dimensions). This approach seems ideally suited to Sculpt, because, as I pointed out above, the program is so visually oriented.



Combining several menu commands and translating them into one keystroke also speeds things up considerably. You will find that you can create objects more quickly and that the computer doesn't seem to get in betweeen you and your work so much. Use the Sculpt manual to see how to set up your own startup.script. What I am going to do here is show you some of my favorite key definitions.

HOLY MACRO!

Probably the keys I use the most are

```
macro C des all sel con mend
```

and

```
macro c sel con mend
```

With the first, I can select an object I want to move without any possibility of accidentally moving something I might have selected previously, but which is now no longer inside Sculpt's Tri-View. I simply position my cursor over a connected Sculpt Vertex and then press SHIFT-C. I use the second hot-key when the object has additional parts that are not physically connected, but which I would like to move along with it. Here I simply point at each one and press the c key.

Below are several other hot-keys—with functions identified—that have to do with grabbing and moving things in Sculpt:

```
macro g gra on mend                              ; turn on grabber
macro G des all sna cur ver sel con gra
    on mend                                      ; grab an object
macro f des all sna cur ver sel ind ver
    gra on mend                                  ; grab one vertex
```

A fourth key,

```
macro q sel swa hid sna cur ver sel ind ver rev
    gra on mend
```

is similar in function to the group above, but may need a bit more explanation. I use it for selecting a Knot on a spline. I frequently want to wiggle a spline around, yet when I zoom out far enough to see the entire spline, the Vertices are so close together that I have great difficulty selecting the next Knot I wish to move.

What usually happens is that I keep selecting adjacent Vertices that are not Knots without succeeding in pinpointing the correct one. Using this macro, I need only get somewhere near the Knot and then

press the q key in order to make the right selection.

The next hot-key,

```
macro y sel swa hid sel all mend
```

speeds up Tri-View refreshes, which essentially means that I can work faster because the program "hides" everything except what I am currently working on. Similar in function, the key

```
macro ! sel all hid wir ima vid sta rev mend
```

speeds up wire-frame rendering by causing Sculpt to hide everything before it renders in this mode. If you have ever noticed how Sculpt redraws the Tri-View each time before it renders, you can appreciate how much time can be saved by executing this function—especially when you are trying to position a scene with a lot of points.

While there are many other combinations I could list here, I think you get the idea about how hot-key functions work. Keep in mind that while not all menu commands can be defined by scripts in the manner we've been discussing, it is still possible to automate them in another way. Execute such a command via the mouse and then press ALT plus the key you want defined through that command. Do it once this way and you won't have to go through the menu commands again. □

—Kelly Day



LightWave 3D

Big Part of a Larger Whole

THE VIDEO TOASTER ($1595) is not only a mind-boggling array of hardware—an all-in-one video-production/special-effects-generating system—but also an outstanding collection of software. Besides the Toaster's own internal software, two additional graphics packages are bundled with the system: the 24-bit paint program ToasterPaint and the 3-D rendering-and-animation program **LightWave 3D**.

LightWave 3D offers the look and feel of rendering/animation that until now has been available only in systems costing many times the price of an Amiga/Toaster combo. Because of memory and file-size constraints, high-end systems (and even the Toaster) use step-frame animation that requires expensive, single-frame controllers and frame-accurate VCRs.

This is not exactly bad news. For the most part, the Video Toaster has already delivered impressive results, largely due to its ability to manipulate full-motion video in real time—with spins, tumbles, trajectories, trails, and a host of other sharp-looking effects. Armed with these capabilities, a few tips to help you add motion to objects over 3-D background scenes, and a willingness to experiment, you can achieve a high-end 3-D look without dipping too far into your funds.

This segment concentrates on using LightWave 3D from within the Video Toaster instead of from more traditional approaches such as the front-end or wireframe mode. It also assumes that you have some basic understanding of the Video Toaster, ToasterPaint, and LightWave 3D. (See "Amiga Video: Done to a 'T'," Oct. '90, p. 21, for a complete rundown of Toaster features.)

So, Go "Create a Scene" if You Want!

The key to this technique involves taking full advantage of the Video Toaster's dual frame buffers and TDEs (Toaster Digital Effects) to fly objects over LightWave 3D-rendered backgrounds.

I created the first part (scene 1) of the accompa- ►



The LightWave 3D-rendered objects in the scene above were then manipulated using the Video Toaster to create a number of interesting digital video effects.

nying illustration by using LightWave Modeler (an auxiliary program included for creating objects for use in LightWave) to produce a box, adjusting its thickness in the bottom view to resemble a marble slab. I then renamed the surfaces and saved the object as "slab." Returning to the main screen, I loaded the slab object along with the "sunglasses" object from LightWave's Phonebook accessory disk of predesigned 3-D objects.

Entering the Layout Scene Editor, I positioned the camera, lights, and 3-D objects in the best configuration possible. Before exiting, I made sure to keyframe everything and then performed a fast render to check the overall look of the scene. With that out of the way, I clicked on Surfaces, selected the Marble texture for the slab object, and then changed some of the colors and attributes of the sunglasses object. Keep in mind that an effective way to enhance a scene is to set the Ground Color and Nadir options in the Backdrop menu. Here, I used blue.

After returning to Surfaces a few times to adjust the Marble texture, I rendered the scene using the Antialias option to achieve the highest possible resolution: 1536 × 960. I saved the rendered image as a "framestore" and also saved the preliminary layout scene separately for future use.

We now have a scene with some cool sunglasses and a marble slab, but let's add a little more. On a practical business and commercial level, this is where a logo or other custom, client-specific object could easily come into play. In scene 2 of our sample illustration (the Optiplan logo), I used a company logo of a client who wanted to upgrade his image. I scanned in the logo and cleaned it up in ToasterPaint (including a complete, artistic overhaul of the initial letter O). After adding a drop shadow, I saved the Optiplan logo from ToasterPaint as a framestore (in the Toaster's DV2).

Using the Render to Program button, I rendered scene 1 to DV1 and scene 2 to DV2. After moving to the Switcher Screen, I clicked on DV1 on the Program Bus and on DV2 on the Overlay Bus. I then clicked on the Luminance Keyer to key on black. By adjusting the Clip Levels (the numbers directly above Scissors), I was able to key the Optiplan logo over the slab of marble. The key and the shadow on the logo looked clean, but it was off center. Taking one more trip back into ToasterPaint, I adjusted the coordinates and got the job done right.

"Especially Effective" Touches

After I got the logo centered and properly keyed, the next step was to select the right TDE "Croutons" (digital video effects in each of the Toaster's four DVE banks). In the case of the Optiplan logo, radical TDEs such as tumbles and bounces did not work very well. Some of the Croutons in Bank B, however, proved very successful, although I also managed to find a few useful Croutons in each of the other banks. In using TDEs, always try to keep in mind where the Origin of the effect is when it starts, as well as where the effect moves the object during the transition. For example, in the accompanying illustration, I did not want the logo to bounce off the sunglasses and onto the marble!

Just keep experimenting until you find the effect that works best for you. For future projects, try things such as texture-mapping logos on some of the 3-D primitives already available in LightWave Modeler. Find the right views and moves for your particular scene. Try different Croutons to get the optimum move for your object. There is no substitute for good taste: Subtle moves and transitions on corporate logos usually look best. On the other hand, lots of videographic scenes (i.e., in music videos) can be as wild as you want to make them. Use all of these ideas to add some spice to your Toaster. Bon appetit! □

—Joel Tessler



Imagine

Magnificently Modular

THE FINAL RESULTS of the long evolution of Impulse's Turbo Silver are now available in **Imagine** ($350). Although it retains some of the look and feel of its predecessor, Imagine is a unique and powerful program that I believe will usher in a new era of 3-D modeling and animation on the Amiga.

Because the package is brand new and unfamiliar to many users, this article will not be a standard "tips-and-techniques" piece. What I think would be most valuable to readers in the short space available is to ►

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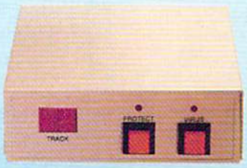


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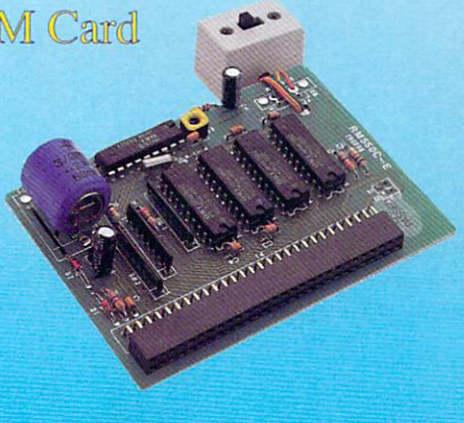


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give a brief introduction to each of Imagine's main program segments, with a few hints and examples as to how you can best work within each of the primary editors. Many of the features are highly innovative and implemented for the first time on the Amiga; some of them have *never* been seen before on any platform; all of them require some explanation to unleash their potential.

As you may have guessed, the program is modular, with specific tasks to be carried out in each of the segments. Using the first, the *Project Editor*, you name and define the project (picture or animation), including such items as the number of frames, the resolution(s) of traces, and the tools for adding or deleting frames and stills. Tools new to Silver users will make all of this much easier.

As you work with test traces and make changes to the scene or objects in it, you can easily delete the finished traces by pressing Project's delete button. This enables you to start a new trace with the same trace parameters. You can quickly accomplish test traces either by selecting one of the smaller screen sizes available in the presets or by choosing your own resolution. Start as low as you wish or specify larger resolutions up to 8000×8000. You can even test different resolutions of the same picture simply by assigning a new subproject.

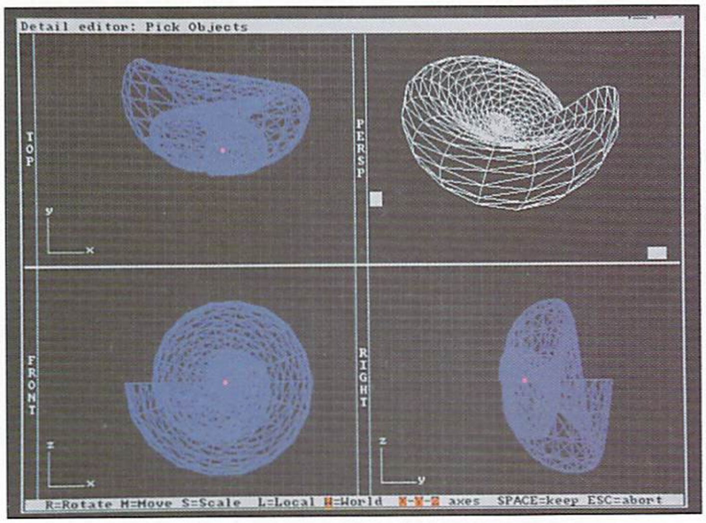
Within the *Forms Editor*, you can easily create organic shapes by defining profiles of the desired object in three views. The concept is simple and makes short work of producing beautiful shapes. Experience will tell you to keep the shapes simple by not including too much detail in the Forms Editor. Allow for just enough density (more slices) in the Slice requester to provide you with an adequate basis to add detail later in the Detail Editor. As another useful tip, close the openings in the front and side views via the Lock command to ensure smooth transitions over the open points.

The *Detail Editor* is a 3-D modeler's dream come true. You can select points by lasso, dragbox, or point-and-click. Athough there are limitations, the number and power of the tools available here are staggering. The Magnetic Drag features are extremely versatile, allowing you to adjust the amount of pull, the shape of the pull, and the radius it affects. To maintain smooth polygon transitions, keep the magnet value low, say less than 5.

Detail's Boolean functions offer the ultimate in object composition. You can cut the shape of one object into another or leave the indentation of an object's shape on the surface of another object. Again, the rule here is keep the objects to medium complexity to start with and avoid points and polygons that are too close together; these present difficulties for the Boolean operator.

For a quick, slick test drive of the Mold function, try the following: From the Function menu, select ADD and then Primitive-Tube, click OK (use defaults), and press F1 to select the object. From the Mode menu, set Pick Method to Points and then select Pick Method/Drag Box. In the front window, hold the Shift key down and drag a box around all the points in the top line. Press Right-AMIGA-D to delete them and then select Pick Object from Mode. From the Object menu, select Transformation, then Translate X 50, and finally click on Transform Axis Only. Scale the object by pressing the s key, and then press the z and y keys to scale X to only about 1.5 times its original size. Now, from the Object menu, select Mold and then Extrude. Set Length to 1, Y Rotation to 720, X Scaling to .1, and Sections to 36.

What you should now have in front of you is a perfect, spiraled, shell-like object; but don't stop there. From the Object menu, select Mold and then Conform to Sphere. Set Sphere radius to 150. The resulting object will have conformed its inner sides to the spherical shape, leaving you with a beautifully molded object with exquisite lines.



Imagine's Detail Editor offers a wealth of 3-D modeling possibilities. The screen above is from the shell-molding example described in the text.

PLENTY OF "ACTION" HERE

The *Cycle Editor* is new and unique. It allows you to define repetitive animation cycles with an ease undreamed of before. Figures walking, birds flapping their wings, and flowers unfolding all become simple animation tasks. By simply pulling out stick-figure representations of your objects and their positions, you can set key frames and assign the actual objects to the stick segments. Pay close attention to the objects that you will use as sections of the Cycle object. Be careful to model the joints so the object will look realistic.

The *Stage Editor* is where all the pieces come together to form the scene or animation. Stage's power ►

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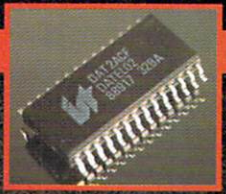
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is realized through the *Action Editor*, by means of which you define the objects you intend to use in the picture or animation, their relationships to one another, the path each will follow, and so forth. The Action Editor is what gives Imagine its outstanding capability to morph in almost an infinite number of ways. You can morph not only objects, but also almost any attribute, including Texture settings. This allows for effortless special effects and amazing power.

I apologize for having to rush through this presentation, thereby skipping many of the other fine features available, but I hope I have given you some ideas on how to effectively use this breakthrough program. Imagine truly does supply the tools to expand everyone's horizons. □

—Louis Markoya

Making Tracks Toward Better Output

SO YOU'VE RENDERED some 3-D images, or perhaps an entire animation, on your Amiga. Now you're looking for better output. . .more colors, higher resolution. . .the "punchy" kind of look that you see on TV. You're in luck! A trainload of hardware and software options capable of addressing these needs has just pulled into the station—and more is on the way!

First out of the cargo car is NewTek's Video Toaster, which has two 24-bit frame buffers—providing over 16 million colors—built right in. If you use LightWave 3D, you utilize the Toaster's frame buffers for single-frame output. (Frame buffers can display only one frame at a time; LightWave supports animation via a compatible single-frame video controller and recorder.) The Toaster, however, can display 24-bit frames generated with other 3-D software; you simply need to convert them to 24-bit IFF format.

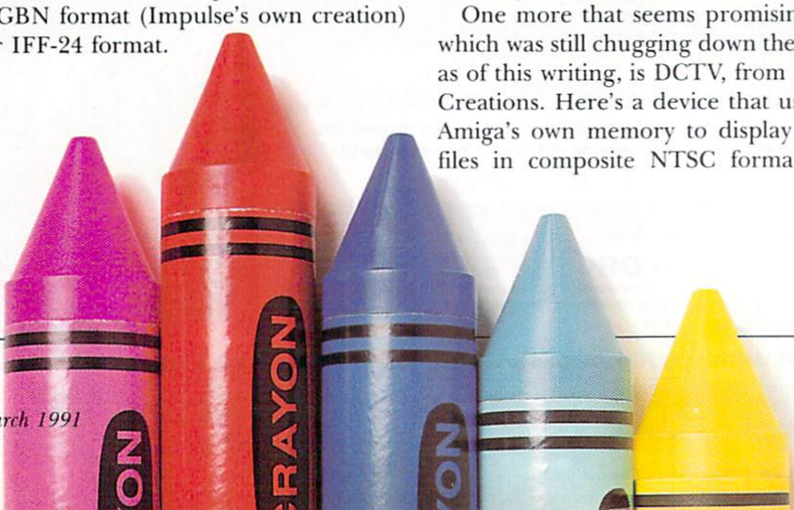
Next comes Firecracker 24, from Impulse. This board fits into an Amiga 2000 or 3000 expansion slot and also displays 24 bits of color. What's more, the Firecracker can share your Amiga RGB monitor with the output from your computer for viewing these "true color" files! (Yes folks, this means that Firecracker outputs RGB.) The unit accepts files in either RGBN format (Impulse's own creation) or IFF-24 format.

Scheduled to arrive on "tomorrow's" train is Colorburst, from M.A.S.T. (which, as of this writing, is not yet shipping). It, too, promises 24-bit frame buffering *and* the ability to combine its output with that of the Amiga.

If you own an A2000 and a Bridgeboard, there's always the tried-and-true (and expensive) Targa/Vista boards from TrueVision. The newest Targa board, TargaPlus, sports an RGB encoder/decoder. This gives you a choice of RGB, composite NTSC, or Y-C-format output (for use with SVHS and Hi-8 video formats), and arguably provides the best-looking output of all the boards listed here. Be warned, however, that these are IBM-only cards (hence the need for a Bridgeboard), and they expect files in Targa format. Image conversion is a must here, as only one Amiga program (the long-lost Opticks by Incognito) supports direct Targa-file output.

Black Belt Systems' HAM-E is a frame buffer of sorts that offers you a choice of either color cycling with 256 on-screen colors (from a palette of over 16 million) or 262,000 on-screen colors without color cycling. It outputs RGB and requires files in IFF-24 format, which it rerenders in HAM-E mode. One real plus for HAM-E is its price: just $300.

One more that seems promising, but which was still chugging down the tracks as of this writing, is DCTV, from Digital Creations. Here's a device that uses the Amiga's own memory to display 24-bit files in composite NTSC format. The company claims that you can play back a 24-bit animation in real time at about the speed of a hi-res, interlaced, eight-color Amiga animation. It also promises support for the IFF-24 file standard.



Switching Tracks

Whichever device you buy, the chances are that you will need to do some image conversion before you reach the end of the line. Two Amiga programs support all the formats listed above: The Art Department (ADSG) and ImageLink 2.0 (Active Circuits). While The Art Department is not a format-interchange program per se, it does convert all the listed formats (using loaders sold separately) to either standard Amiga resolutions, or to IFF-24. ImageLink 2.0 is a format-interchange and conversion program that supports all the formats listed above, as well as full image scaling and direct linking with a Targa/Vista-equipped Amiga. ImageLink also offers conversion to and from many file formats found on IBM and Macintosh systems.

If you want to produce animations using a frame buffer, you'll also need some means of laying your images down onto videotape or film. While many good film recorders are high-end (read: pricey), single-frame video recorders seem to be the standard. One such setup uses the BCD 5000 controller (BCD Associates), MicroIllusions' Transport Controller software, and a compatible video recorder such as the Panasonic AG 7500a SVHS recorder/editor

Whichever setup you choose, animating in 24-bit color is an extremely gratifying form of self-expression—not to mention a good way to make a buck. □

—Mitch Wells

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Animation:Journeyman

Spine-Bending Action!

SMOOTH, NATURAL-LOOKING animation of 3-D objects is often difficult to achieve. Hash Enterprises' new 3-D modeling, rendering, and animation program, **Animation:Journeyman** ($500), offers a unique approach to creating more lifelike 3-D animations. The sample project I have chosen to demonstrate the Journeyman method involves creating an airplane wing that flaps like a bird in flight.

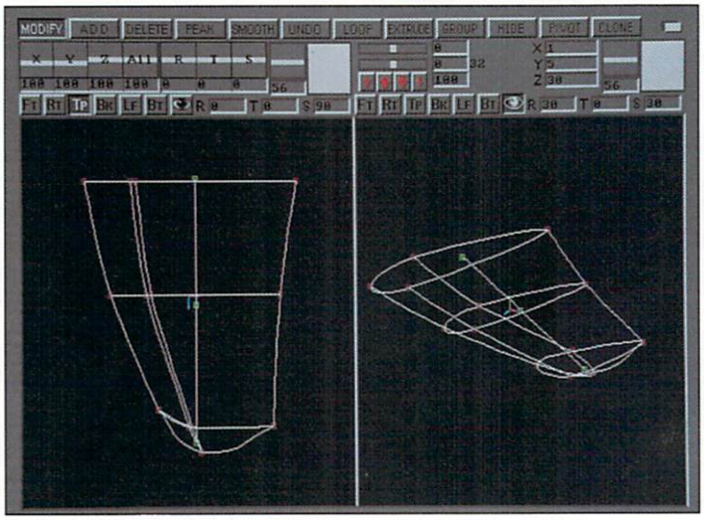


Figure 1. The wing model is created in Journeyman's Sculpture module, where the spine (the line containing three green dots)—to be used later for animating—is also added.

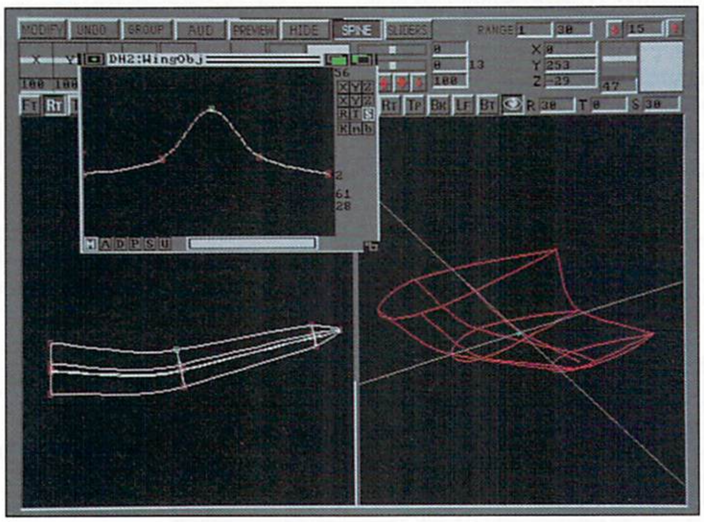


Figure 2. The flapping motion of the wing is created in the Action module, where it is then further manipulated to simulate a smooth, natural flow.

Unlike the polygon-based approach employed by most 3-D modeling programs, Journeyman uses *spline patches*. (In conventional terms, a spline is a thin, flexible wood or metal strip used in building construction.) While some computerists may have experience with splines as 2-D phenomena in desktop-publishing programs or structured-drawing programs, their use in 3-D programs is rare. A potent feature of splines is that no matter how much you stretch, squeeze, or otherwise manipulate them, they still maintain their smooth-curve characteristics. The same holds true for the way Journeyman uses 3-D splines to represent smooth patches, corners, bumps, and rounded edges of 3-D models that contain *no polygons*.

Journeyman provides its user with the ability to bend a 3-D model as if it were made of plastic or skin. You implement this feature through a technique called *spine editing* (not to be confused with "spline"). The spine of a 3-D model in Journeyman is very similar to the human backbone. When the spine bends, so does the skin and muscle around it. A Journeyman 3-D model that surrounds a user-defined spine bends like skin when the spine is bent.

Show Some Backbone for a Change

The first step is to create the airplane wing in Journeyman's Sculpture module. You can make an excellent model of a wing by first creating a flat diamond shape. Journeyman will automatically smooth out the tips. Modify the smooth diamond shape to create a cross-sectional cut of an airfoil. Now, extrude this 2-D closed-spline curve into the third dimension and scale it twice to create the actual wing (see Figure 1).

Next, you need to add the spine. Do this merely by inserting an extra line into the center of your object (the line with three green dots in Figure 1). Notice that the number of points on the spine line matches the number of extruded sections. Save the wing model and exit Sculpture.

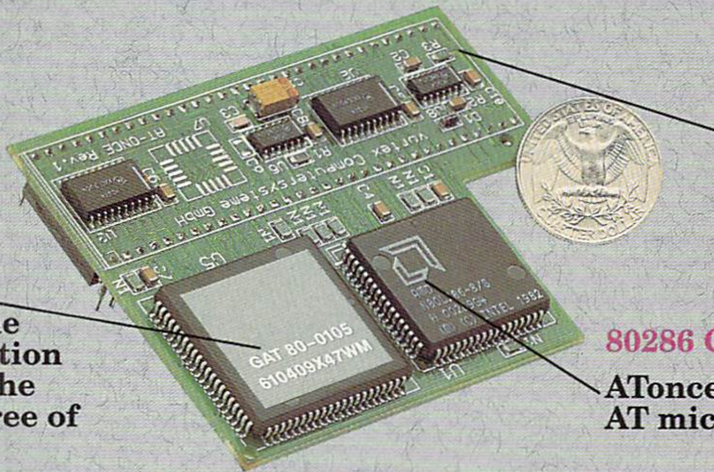
Then load the sculpture into Journeyman's Character module and apply color and texture to it. After adjusting the attributes of the wing model, save it again under a name different from that of the first model. Exit Character.

You are now ready to create the wing motion in the Action module, which is where the spine you created in Sculpture will come into play. After the model loads, select it by clicking on its center. Press ►

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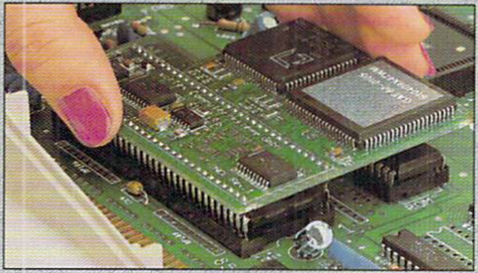
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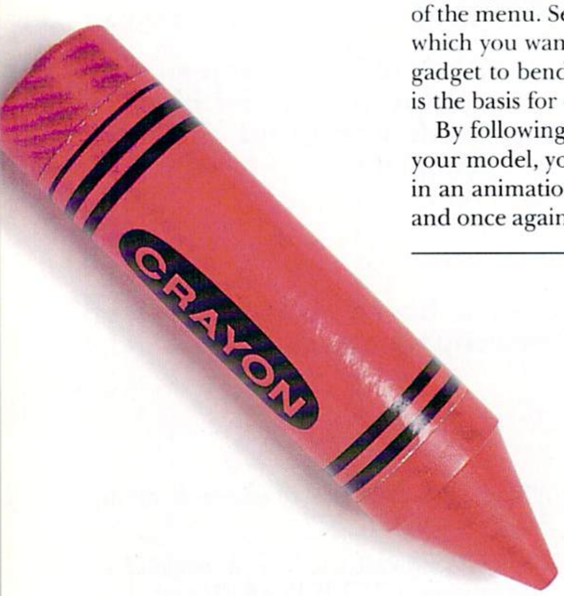
w on the keyboard to show the model in its wire-frame representation.

In the left window, select any point on the spine line that runs through the center of the wing, and choose Assign Spine from the pull-down menu. Enter Spine mode by clicking on the Spine button in the top center of the menu. Select the point on the spine line around which you want the model to bend. Alter the rotation gadget to bend the model along with the spine. This is the basis for creating the flapping wing.

By following these procedures to make changes to your model, you are creating an automatic key frame in an animation. Change the frame count to read 30 and once again make a rotation change. Journeyman will now create all the in-between frames. At this point, the flapping motion created has no acceleration or deceleration. By selecting the Spine Channel from the pull-down menu, you can add a hyperbolic curve to this linear in-between to simulate the natural flow of a wing (see Figure 2).

The techniques described above should help Journeyman's users create a more natural feel for their animations. The program's spline controls in both the modeling (Sculpture) and animation (Action) editors of Journeyman are truly unique. You will become fascinated by the power of these tools as you continue to experiment with them. □

—Greg Rostami



PageRender3D

Power At Your 'Command'

THE HEART AND soul of Mindware International's **PageRender3D** ($159.95) is its powerful command language. This is not an easy beast to tame, however, and the keys to harnessing its power are familiarizing yourself with its scripting capabilities, learning more intuitive shortcuts, and developing time- and memory-saving work procedures.

All of the many PageRender mathematical functions used to generate 3-D images are based on the program's command language. PageRender3D supports a complete script interface to make using those commands easier and faster. Learn how to use these scripts, as well as how to access commands directly through gadgets and menu selections. This will help you avoid confusion and some very time-consuming, annoying, and repetitive keyboard work.



PageRender3D's extensive script commands offer access to the powerful mathematical functions used to generate impressive 3-D images like the one above.

Also, be sure to make use of PageRender's excellent ARexx capabilities. The program was one of the first Amiga packages to offer ARexx support. ARexx scripts can take advantage of PageRender3D's public port to pass random numbers and variable substitutions that are not normally implemented in the command language. ARexx will extend the range of what you can create with PageRender, as well as automate many procedures involved in rendering and animation.

SMALL ECONOMIES, BIG DIVIDENDS

Focusing more specifically on user tips designed to give you better results, here are a few suggestions that work for me when I'm using PageRender.

Whenever possible, divide your plans or concepts into separate, distinct parts. Use the program's interactive functions to help you work out those sections where you are not sure exactly how to proceed. In particular, don't hesitate to use the Record On/Record Off feature to record your "experiments" to disk or printer for later reference. PageRender3D con- ►

CD-ROM & new *Rewritable Optical* drive systems for the Amiga®



CD-ROM System

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CD*x*-650I internal system........$599.00
for the A-2000/2500/3000

CD*x*-650E external system......$699.00
for all models

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FastTrak Systems

Factory-installed software. All FastTrak and FastCard drive systems are now shipped with user-specified portions of the Fred Fish library installed at no charge. Please contact Xetec for additional details.



Drive systems for the A-500/1000

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FastTrak Quantum 40 meg......$650.00
FastTrak Quantum 80 meg......$895.00
FastTrak Quantum 105 meg.....$985.00

Add-ons

FastRam with 2 meg.............$225.00
FastRam with 4 meg.............$375.00

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Drive systems for the A-2000

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FastCard Plus Q40 0 RAM......$550.00
FastCard Plus Q80 0 RAM......$810.00
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veniently inserts messages indicating new sequences. Edit these experiments to start your working scripts.

Also, save your old scripts! You will be surprised at how valuable they can be later on. Because you can use PageRender's Read command to import other scripts to your current script, building libraries of useful "subroutines" out of previously used scripts can pay handsomely. They can provide a solid foundation for future work and save you the considerable time and effort you would spend starting from scratch each time you begin a new project.

While you're at it, if you are creating animations, remember also to save the individual frames whenever possible. If you need to revise your work at a later date, it is a lot easier to make changes to single frames than to redo whole sequences. Even if you have to make wholesale changes throughout, it is still faster to remake the entire animation from the existing frames than it is to regenerate it from scratch.

In terms of rendering, be aware that new objects in PageRender are not created at the "origin," or imaginary center(0,0,0), so rotate the viewing position to align with one of the three axes when you create such objects. Also, create shape "templates" using external paint programs to help with hard-to-draw objects, and center these templates on the screen to align them with PageRender3D's vertical axis. Move newly created objects to the origin and position them on it. Then save them as Work Objects before you do anything else to them. It is easier to delete them than to re-create them. Make sure you use the Binary setting here; it reduces file size about 40 percent.

Finally, be economical with regard to object size and complexity. The more facets an object has, the more time is consumed in moving and drawing it, and the more memory is required to hold it. If you are involved with more intricate rendering, remember that moving and redrawing a single complex object is faster and expends a lot less memory than reworking a group of them. In addition, when you are creating animations, always substitute simple objects for complex ones in motion tests, and try to choose those that show the motion most clearly.

PageRender3D is a very powerful, complete three-dimensional graphics operating system. Learn to work with it and you'll agree with me that it can produce some very impressive results.

—Phil Fitzpatrick ■

Manufacturers' Addresses

Active Circuits
1985 Highway 34, Suite A4
Wall, NJ 07719
201/974-1616

ASDG
925 Stewart St.
Madison, WI 53713
608/273-6585

BCD Associates
7510 N. Broadway, Suite 205
Oklahoma City, OK 73116
405/843-4574

Black Belt Systems
398 Johnson Rd.
Glasgow, MT 59230
406/367-5509

Byte by Byte
Arboretum Plaza II 9442
Capitol of Texas Hwy. N, Suite 150
Austin, TX 78759
512/343-4357

Hash Enterprises
2800 E. Evergreen Blvd.
Vancouver, WA 98661
206/573-9427

Impulse
6870 Shingle Creek Pkwy. #112
Minneapolis, MN 55430
612/566-0221

M.A.S.T.
1395 Greg St. #106
Sparks, NV 89431
702/359-0444

MicroIllusions
17408 Chatsworth St.
Granada Hills, CA 91344
818/360-1464

Mindware International
110 Dunlop St. W., Box 22158
Barrie, Ont.
Canada L4M 5R3
705/737-5998

NewTek
215 S.E. 8th St.
Topeka, KS 66603
913/354-1146
800/843-8934

Panasonic
1 Panasonic Way
Secaucus, NJ 07094
800/553-7222

Progressive Peripherals
464 Kalamath St.
Denver, CO 80204
303/825-4144

Truevision Inc.
7351 Shadeland Station, Suite 100
Indianapolis, IN 46256
800/853-8783

Kelly Day is Computer Animation Director for Walt Disney Television. He has led the crusade to introduce the Amiga to the company.

Phil FitzPatrick teaches art—including Amiga graphics—at Lamar University in Beaumont, Texas. His background is in commercial design and advertising.

John Foust has been writing about virtually every aspect of the Amiga since the machine's inception. He is president of Syndesis Corporation.

Louis Markoya uses his Amiga to do freelance graphics work for corporations. He is the 1989 winner of the AmiEXPO Art Conference's 3-D competition.

Greg Rostami is a computer consultant who uses the Amiga to produce 2-D and 3-D computer graphics for the video and film industries. He has used all 3-D programs available for the Amiga.

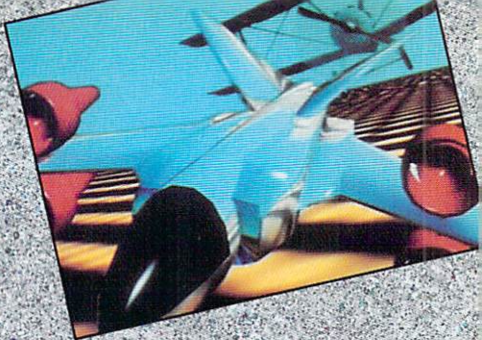
Bradley Schenck is a freelance graphics artist who has won the Badge Killer Demo Contest twice in a row. His 1989 winning entry was created using Turbo Silver.

Joel Tessler is a video and animation guru and a staunch Amiga enthusiast. Joel introduced the machine to Joe Robbie Stadium—home of the Miami Dolphins—where he uses an A2000 to operate the scoreboard animation system.

Mitch Wells runs a video-production, sound-recording, and desktop-publishing service. The Amiga is his primary tool for 2-D and 3-D video and publications work.



All photographs are of actual DCTV screens.





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The "Ami 500"

A THREE-PART GUIDE TO UPGRADING YOUR A500

Part 2: Putting It in Hard Drive

If you want a super fast start and a full reserve of memory and storage power, add a hard drive during your second pit stop here in Part 2.

By John Wolfskill and Tim Walsh

In Part 1 of this series, we looked at RAM expansion, which is the natural first step in any upgrade plan. With more RAM under its hood, your A500 can run larger programs, you can build sophisticated animations, and you can be generally more productive. But even though your fledgling road machine seems a bit easier to handle going into the turns, you may find that it still bogs down on the backstretch. Perhaps the long wait between flipping the power switch and the appearance of Workbench doesn't fit your new lifestyle, or the "floppy disk shuffle" isn't your dance step anymore. What can you do? The answer may be a hard-disk drive.

In Part 2, we'll take a hands-on look at four turnkey hard-drive systems that allow you to add 20–50 megabytes of fast data and program storage. And if you haven't taken the plunge for a RAM upgrade to your system, don't worry. Three of the four drives have options allowing you to add up to 8MB of fast RAM, and you can add up to 2MB with the fourth.

Using our Amiga 500 Professional as the test bed, we prodded and probed and finally rated the drives according to performance, ease of installation, and quality of documentation. We also assigned an overall grade that takes into account the price you pay for them. Of course, no roundup of hard-disk drives would be complete without a performance comparison, so we subjected the drives to a battery of benchmarks designed to test their mettle in a variety of computing situations. (For the lowdown on performance, refer to the sidebar "See How They Run.") For good measure, we also conducted a few "real-world" tests to develop a personal feel for how well each drive performs in daily use.

First Things First

Before you begin filling your mass-storage tank, it's a good idea to make sure your particular Amiga's hardware will work efficiently with your new drive. Perhaps the single most important item to consider is your A500's Kickstart ROM chip. If yours is an older machine, it probably has a version 1.2 (or earlier) ROM on board. To avoid disappointment, you should replace this chip with a later version before you purchase your new drive. New Amiga 500s are shipped with the latest incarnation (1.3) of Commodore's Kickstart ROM, which, among other enhancements, provides ►

ILLUSTRATED BY ROBERT MORRISSEY


500
PDQ
AMIGA 500
RM

autoboot support for hard drives.

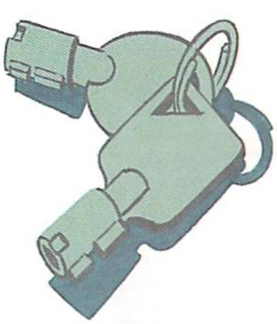
How do you tell which version of the chip is installed in your A500? Simply remove the disk from your floppy drive and turn on your system. If your start-up screen asks you to insert the Workbench 1.2 disk, you have a Kickstart 1.2 ROM on board. Or, if the system asks for Workbench 1.3, you have the latest version. If you need to upgrade, it's easiest to have your local Amiga dealer install the 1.3 Kickstart ROM. Besides autoboot support for hard drives, the chip provides other features that will add value to your system. The cost to upgrade at most Amiga dealers is about $60.

Supra 500XP

Good performance and ease of installation are strong points of the Supra 500XP. The 40MB drive, which couples to your A500 through the system-bus connector, comes with built-in SCSI circuitry, sockets for up to 8MB of fast RAM, and a pass-through system-bus connection. A bank of DIP (Dual Inline Package) switches mounted on the right side of the case allows you to easily change the SCSI device number and to disable the drive and its autoboot features.

Inside the sturdy metal case is a Conner Peripherals' Model CP3040 $3\frac{1}{2}$-inch hard drive mounted above a circuit board with 16 RAM sockets that provide memory expansion up to 2MB, using standard 256K×4 bit DIP DRAM chips. To expand the 500XP's on-board RAM beyond 2MB, you need to purchase the optional ZIP RAM adapter, a card that plugs into the memory section of the drive's circuit card. The adapter allows you to install up to 16 (1MB×4 bit) ZIP-packaged RAM chips to provide the maximum 8MB of RAM. You should know that ZIP RAM is generally more expensive and harder to find than standard DRAM chips. Also, if you plan to expand the 500XP's RAM beyond 2MB, you'll need to get Supra's optional external power supply.

The 500XP was a cinch to install, and it worked reliably in daily use. During the initial tests, we had the test machine up and running in less than five minutes, thanks to Supra's excellent hardware and software manuals. We recommend the 500XP for any computing purpose, especially for those who don't want to deal with a complex hard-drive installation or wrestle with poorly written documentation.



Supra 500XP
Base Price: $895 with 2MB RAM
Options: RAM adapter card, $279.95; external power supply, $49.95
Autoboot: Yes
Warranty: One year
Performance: Excellent
Ease of installation: Excellent
Documentation: Excellent
Overall: Excellent

GVP Impact Series II A500+

If you want the fastest hard drive available for your A500 system, look no further than GVP's Impact Series II A500+. Its sleek, contoured case is a pleasing aesthetic match for the A500. When the two units are mated together, the drive enclosure blends into the system instead of appearing as a bold afterthought. Looks aren't everything, however. Inside is a $3\frac{1}{2}$-inch, 49MB Quantum Prodrive (Model LPS), mounted astern of GVP's SCSI device circuitry. Also included are four empty SIMM (Single Inline Memory Module) sockets, each one of which allows you to add 2MB of fast RAM.

Installing the 8MB RAM upgrade kit took longer than necessary because of a few confusing instructions in GVP's manual. It still took only a few moments, however, to open the drive case and install the SIMM sockets that boost the A500+'s RAM to its maximum capacity in one fell swoop. If you don't need that much memory, you can upgrade the RAM in 2MB increments.

The drive comes with its own external power pack that serves both the drive and the RAM chips. On the front panel is a slide switch that allows you to turn off the drive's autoboot feature when you play games that require the A500 to start from a floppy disk. To install the drive, you remove the CPU-slot door, attach the drive to the system-bus connector, and then turn on the drive's power supply and your Amiga.

GVP provides an excellent utility package, called FAAASTPREP, that not only provides automatic preparation of the hard disk for novices, but also allows veteran users to set up the drive's data partitions according to their own specifications. Together, GVP's proprietary, 50-pin SCSI device controller and Quantum's LPS hard drive add up to incredible performance. The Impact Series II walks away from every other A500 hard drive we've ever tested. In more earthly, workaday tests, the GVP system required only ►

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16 seconds to launch the A500 from a cold start to full Workbench operation.

GVP Impact Series II A500+
Base Price: $799
Options: RAM upgrade kit, $269
Autoboot: Yes
Warranty: One year
Performance: Superior
Ease of installation: Excellent
Documentation: Good
Overall: Superior

Xetec FastTrak

The Xetec FastTrak system proves there's more than one way to attach a hard drive to an A500. This high-quality hard-drive system comes in two pieces: a SCSI host adapter module that connects to the CPU expansion slot, and an enclosure that houses a 3½-inch, 52MB Quantum (Model LPS) hard drive.

Inside the drive enclosure, there is also a 40-watt power supply with built-in cooling fan. A 25-pin cable provides the connection between the host adapter and the drive enclosure. Besides the SCSI circuitry, Xetec includes a pass-through connection for the system bus and proprietary DMA (Direct Memory Access) circuitry within the host adapter module to boost performance during disk-to-memory transfers. This hardware design allowed the FastTrak system to post a respectable overall performance rating in our benchmark tests. The SCSI adapter enclosure also includes an extension of the A500 bus, providing a place to plug in Xetec's optional memory-expansion board, which contains sockets for up to 8MB of fast RAM expansion.

At first glance, the two-piece system looks bulky. We soon found, however, that it takes up about the same amount of desktop space as a standard A500 hard drive. The sturdy design of the drive enclosure allows you to place it below your monitor, thus saving precious desktop real estate. We were impressed by the quality and workmanship of the components that make up the FastTrak system. Setup required only a few minutes, thanks to good documentation. If you're seeking a hard drive that will hold up for the long haul, the FastTrak system is worth a second look before you decide.

Xetec FastTrak
Base Price: $650
Options: Ram Expansion card, $75
Autoboot: Yes
Warranty: One year
Performance: Excellent
Ease of installation: Excellent
Documentation: Excellent
Overall: Excellent

Continued on p. 50.

See How They Run

IN OUR QUEST for realistic performance figures to guide the average A500 owner in choosing a hard-disk drive, we thoroughly tested the four drives described in this article. We obtained most of the information in the accompanying charts through using Michael Sinz's DiskSpeed 3.1, the de facto standard that virtually every hard-disk manufacturer employs to substantiate its drive's performance.

We performed the first set of three tests (see Figures 1, 2, and 3) on each hard disk, with Workbench 1.3 and its assorted files installed. We activated three options to simulate a real-world multitasking environment. First, we set test intensity to "High," to activate multipliers. Second, we activated Central Processing Unit (CPU) stress to repetitively copy strings during disk activity, keeping the A500's 68000 chip busy. Finally, as if that were not burden enough, we set the Direct Memory Access (DMA) contention option to the "On" position.

As its name implies, DMA contention contends with the data bus in continually generating a list of instructions for creating Chip/DMA cycles to simulate video overscan. This means that while the hard drive is copying, reading, writing and generally abusing loads of data, the computer is sharing the same space on the bus to perform other functions, purely for effect.

The combination of these three test options simulate the way most Amiga computerists use applications software on their Amigas: e.g., simultaneously running a paint program, a telecommunications package, and a word processor, while a 3-D object renders somewhere in the background. Finally, we performed the tests again with CPU stress and DMA contention turned off, and the test intensity set at "High."

For simplicity, all the graphs reflect only the data gathered using a buffer size of 256 kilobytes. The first graph shows the number of bytes created, the second indicates the number of bytes written, and the third the number of bytes read—all in the span of one second. The graphs contrast performance with DMA contention and CPU stress both on and off.

Figures 4–7 show the number of files that each hard-disk drive was able to create, open and close, scan, and delete, respectively, in one second, with and without DMA contention and CPU

Continued on p. 50.





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From the Action Replay II preference screen you can now set up autofire from 0 to 100%. Just imagine continuous fire power? Joystick 1 and 2 are set separately for that extra advantage!

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With the new "Diskcoder" option you can now 'tag' your disks with a unique code that will prevent the disk from being loaded by anyone else. 'Tagged" disks will only reload when you enter the code. Very useful for security.

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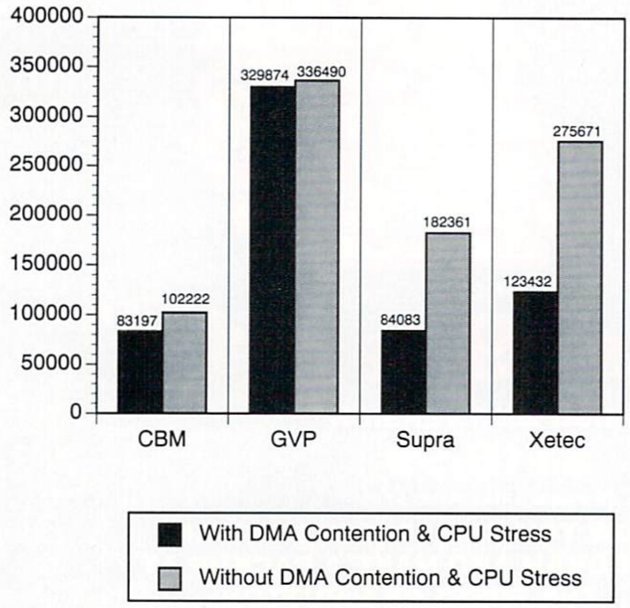


Figure 1. Bytes created per second.

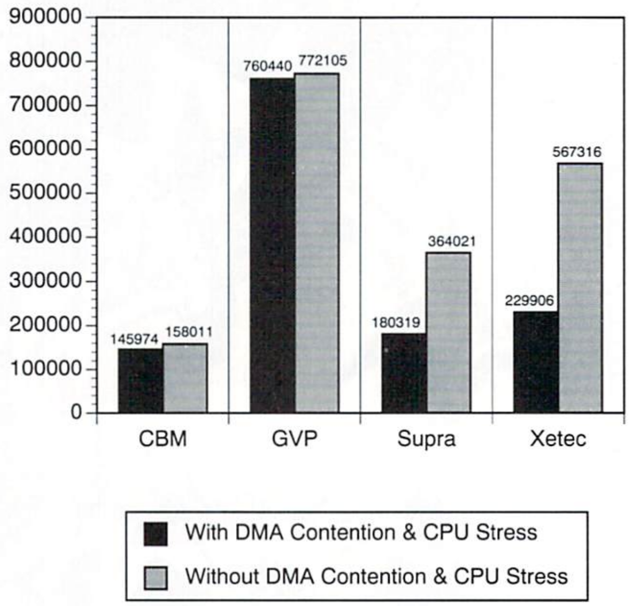


Figure 3. Bytes read per second.

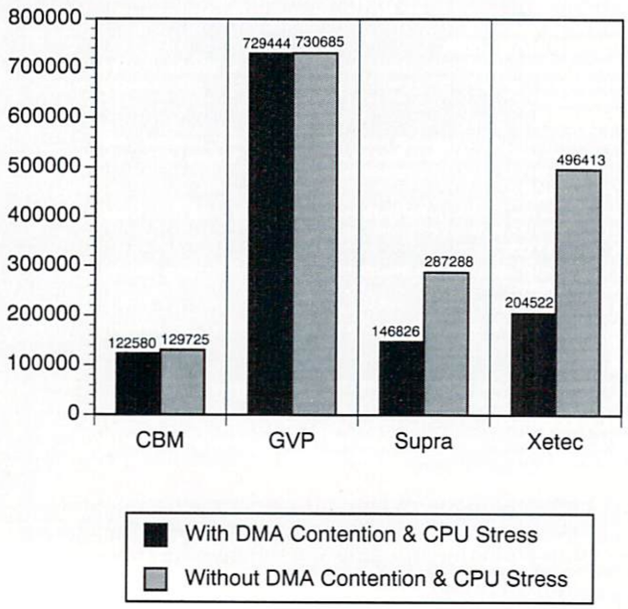


Figure 2. Bytes written per second.

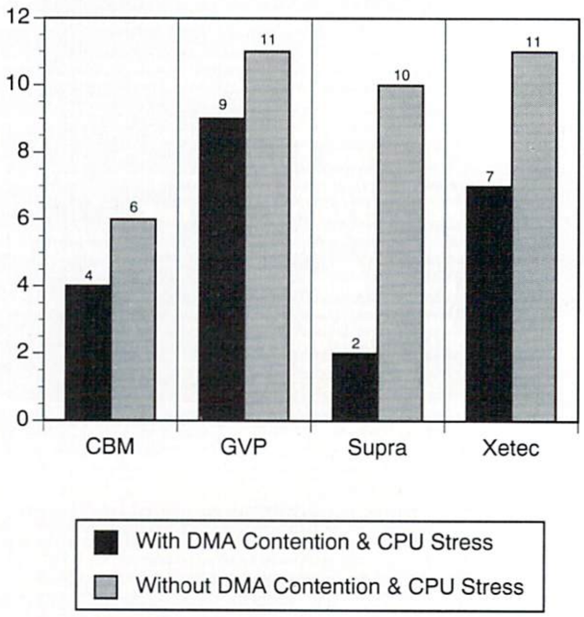
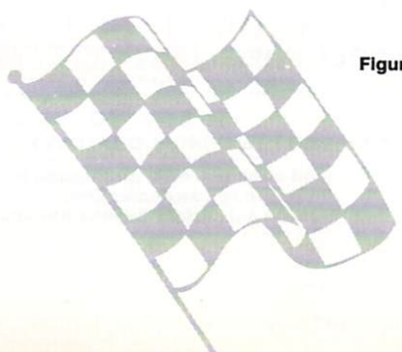


Figure 4. Files created per second.



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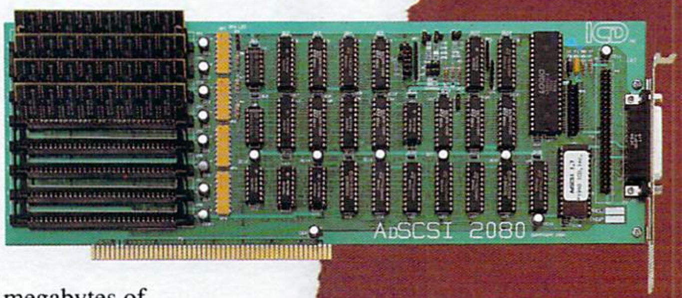
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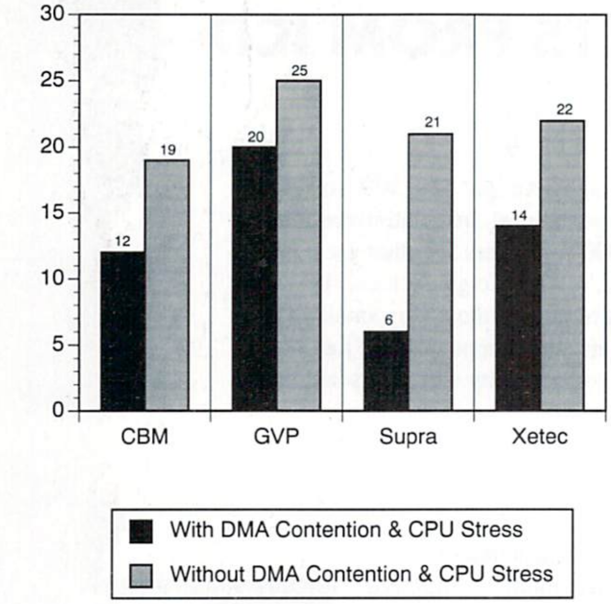


Figure 5. Files opened/closed per second.

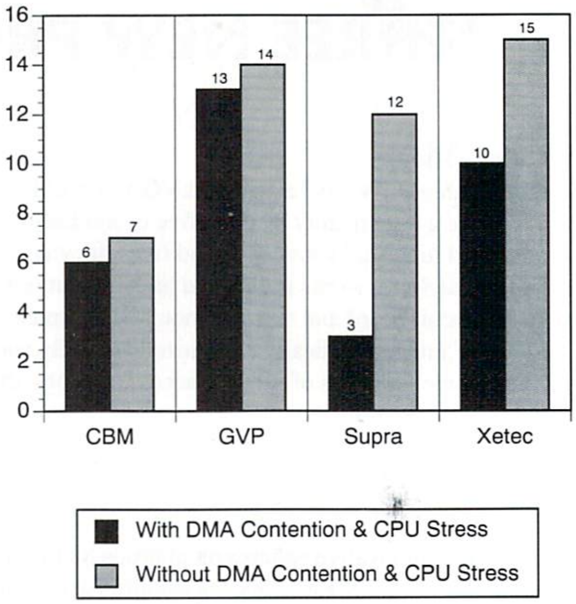


Figure 7. Files deleted per second.

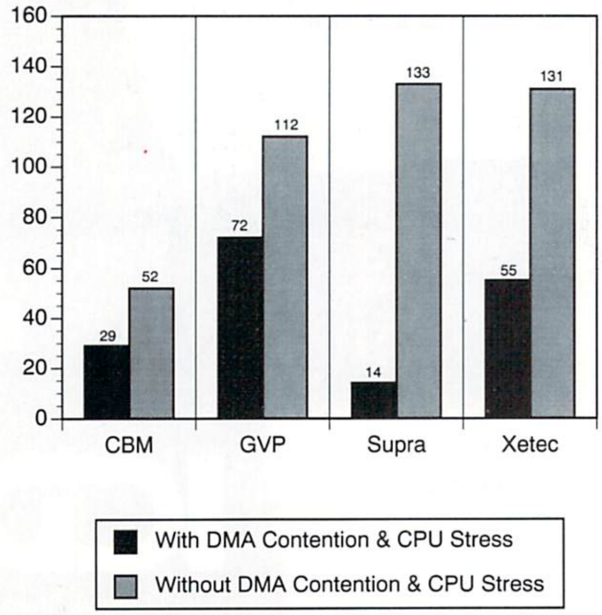


Figure 6. Files scanned per second.

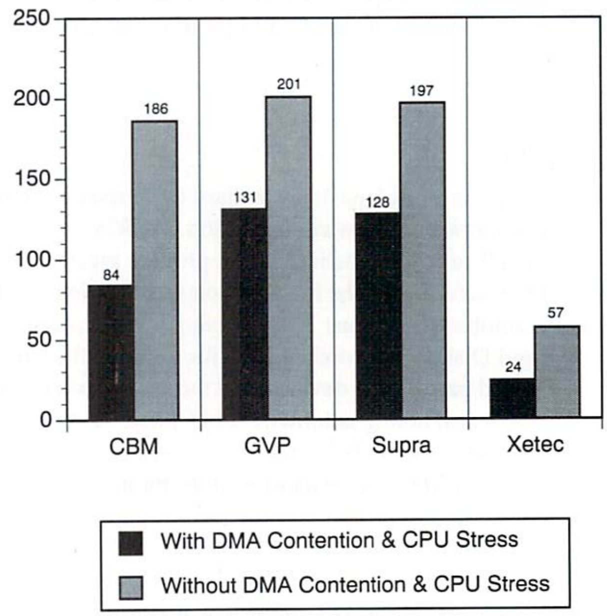
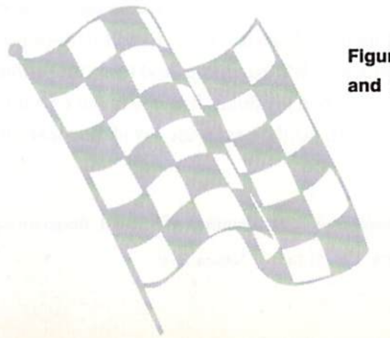


Figure 8. Number of times per second that the drive's head can seek out and read a specified file.



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From p. 44.

stress. The graph in Figure 8 shows the seek/read times, that is, the number of times per second that a given file is sought and read—again, with and without DMA and CPU factors activated.

Finally, Figure 9 is a graph of the results of two tests: "load Workbench from hard disk" and "build a new index." The first is a simple, but effective comparison of the number of seconds taken by each drive to load Workbench from a cold start. The timing begins when the power is switched on and ends when the startup-sequence finishes the autoboot process. Because of differences in the startup-sequences supplied by the manufacturers, the same generic Workbench 1.3 startup-sequence was copied to each Workbench-equipped drive for this test.

The second is a typical real-world test of building a new index on one field within a large file, using Precision Software's Superbase version 3.01. For test purposes, Superbase and *AmigaWorld*'s company name and address file (consisting of 568 records with 15 fields and containing 145,664 bytes of data) were copied onto each hard disk. □

—Tim Walsh

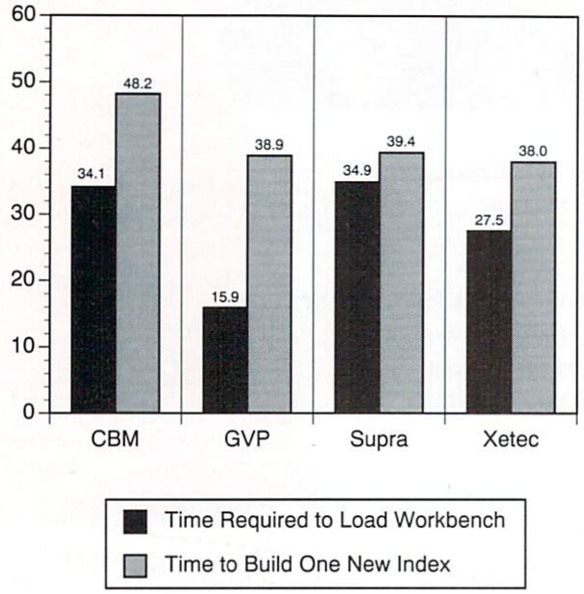


Figure 9. Graphs of two tests: The number of seconds taken (1) to load the Workbench from a cold start and (2) to build a new index.

Manufacturers' Addresses

Commodore Business Machines
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West Chester, PA 19380
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Albany, OR 97321-9944
503/967-9081

Xetec
2804 Arnold Rd.
Salina, KS 67401
913/827-0685

From p. 44.

Commodore A590

Good documentation comes with the A590 hard drive, but in some other respects—small storage capacity and low system performance, for example—it verges on the mediocre. The 20MB drive connects to the A500 via the system-bus connector. Its features include a built-in SCSI interface, special DMA transfer circuitry to speed up disk-to-memory transfers, sockets for up to 2MB of fast RAM, and a pass-through connection that allows you to daisy-chain other SCSI devices to the system.

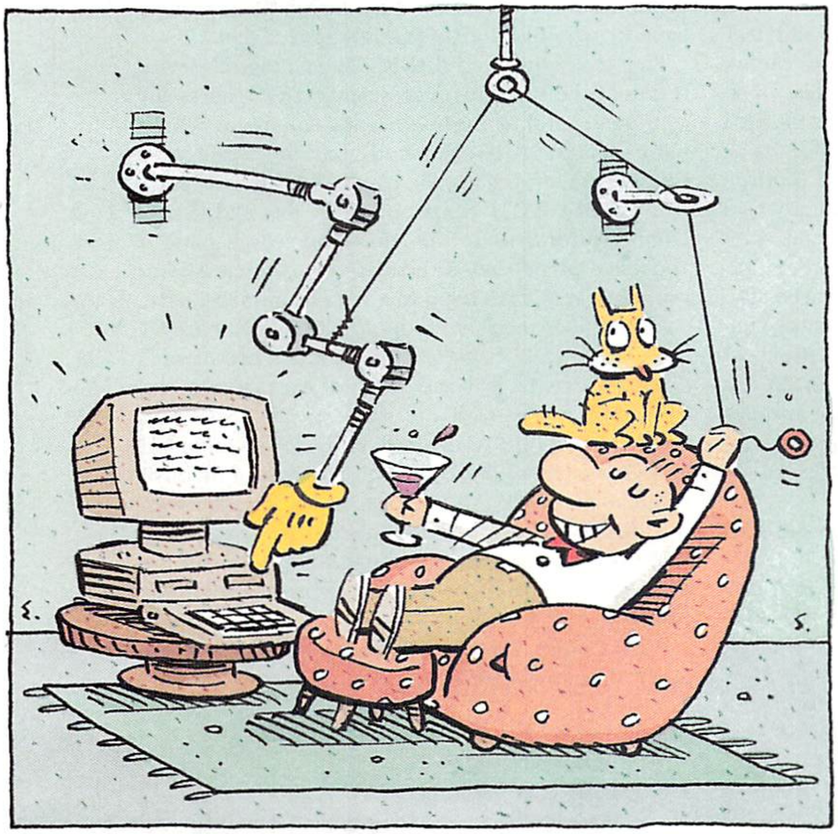
Like the GVP Series II drive, the A590's case closely matches the design of the A500, but its appearance isn't as sleek and low-slung as the GVP design. Inside is a 20MB drive mounted above a small circuit board that provides up to 2MB of fast RAM (you can add RAM in 512K increments). Unlike other hard drives that provide add-on RAM, the A590's upgrade process is more time-consuming because the empty RAM sockets are mounted beneath the drive. Consequently, you must remove the drive from its mountings to install the new chips.

The A590 is a workhorse. We found that it functioned reliably and without problems during several months of moderate daily use. Commodore provides excellent documentation that covers anything you need to know about the system, from setup to troubleshooting, and more. Unfortunately, the A590 checked in second from the bottom of the pack in overall system performance. This, coupled with its small storage capacity (20MB) and moderately high price, would suggest that you look at alternative drives before including the A590 in your upgrade plans.

Commodore A590
Base Price: $629
Options: 2MB RAM upgrade, price not available
Autoboot: Yes
Warranty: One year
Performance: Fair
Ease of installation: Excellent
Documentation: Excellent
Overall: Good ■

Custom Starts

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WHEN THE ALARM clock sounds, you drag yourself out of bed and launch into your daily routine—a procedure you've probably honed to maximum efficiency over the years. You drop to the floor for a push-up or two and then hit the shower while an English muffin browns in the toaster and your auto-time coffee maker kicks into gear.

Your Amiga starts off on its own "morning" routine when you flip its power switch. This process involves executing a sequence of files on its system disk: Mountlist from the devs directory, followed by Startup-Sequence, StartupII, Shell-Startup, and CLI-Startup in the S directory. By modifying these files, you can tailor your Amiga's environment to ease your daily work and save yourself some effort.

I will use parts of my own start-up files as samples to show you how you can customize yours. I'll tell you why I have included the things that it comprises and how the various parts work together. I will also give you some suggestions on how to modify your system's startup to your own particular needs. These tips can help, whether you use AmigaDOS 1.3 or 2.0.

Because customizing your chain of start-up files involves issuing commands, you need to have an understanding of your system's Command Line Interface in order to accomplish the task. For some background information on working with the CLI, refer to the two-part info.phile series on scripting in the Nov. '89 (p. 78) and Dec. '89 (p. 96) issues.

SERMON ON THE MOUNTLIST

Your system's Mountlist does not load logical devices itself, but describes them to AmigaDOS so that *it* can load them (usually from the Startup-Sequence) via the MOUNT command. The hard-disk FastFile-System, the NEWCON: handler, with its command-history support, and the RAD: Recoverable RAM Disk are examples of logical devices (as opposed to physical devices, such as hard and floppy drives) that you may want to put in your Mountlist. I recommend you include an entry for RAD: there.

Once the system is loaded, the first script AmigaDOS runs is the Startup-Sequence. This should be short, issuing just the commands necessary to mount RAD: and NEWCON:, to initialize your PATH and the Shell or the CLI, and to load the Workbench. After loading ►

By David T. McClellan

ILLUSTRATED BY ELWOOD SMITH

NEWCON: and the resident Shell-Seg (for the Shell), my Startup-Sequence script executes the StartupII script (where I do most of my customization) and pauses until StartupII either finishes or fails:

```
FAILAT 11        ; Quit if StartupII fails
RUN EXECUTE >NIL: S:StartupII ; Do StartupII
WAIT >NIL: 5 mins     ; Pause 'til it completes
```

The first thing my 1.3 AmigaDOS StartupII does is place the commands I use most frequently—LIST, CD, DELETE, COPY, and DIR—into memory via the RESIDENT command. Memory-resident commands execute quickly because AmigaDOS does not have to load them from the disk every time it needs to access them.

My StartupII also temporarily places the MOUNT and ASSIGN commands in memory. You cannot make a command memory-resident unless it is "pure." (Use the LIST command to examine the file's attributes; if the set of flags following the file name and size includes the letter p, the command is pure.) AmigaDOS 2.0 automatically makes a number of commands resident. These so-called internal commands include ASK, ALIAS, CD, ECHO, IF-ELSE-ENDIF, RESIDENT, and others. Whichever version of AmigaDOS you use, you can benefit from placing into memory the pure commands that you use most frequently. If you can afford the memory to do this (each command requires slightly more memory space than its file size indicates), you will notice the resulting time difference—especially when running CLI or Shell scripts.

Next, StartupII creates a couple of directories in the RAD: recoverable RAM disk:

Step 1:

```
IF NOT EXISTS RAD:C
MAKEDIR RAD:C
COPY C:EMACS RAD:C
COPY SYS:Utilities/CMD RAD:C
...
ENDIF
```

Step 2:

```
ASSIGN C: RAD:C
PATH SYS:C SYS:Utilities ADD
```

Step 3:

```
IF NOT EXISTS RAD:S
MAKEDIR RAD:S
COPY S:init#? RAD:S
...
ENDIF
ASSIGN S: RAD:S
```

Step 1 checks to see if a directory named C exists on RAD:. If no such directory exists, the code proceeds to create it. It then copies commands that are not pure—such as MicroEMACS (my editor of choice), CMD (printer redirection), and various utilities—to the C directory. Such commands, because they are not pure, cannot be resident. Since I use them so frequently, however, and have sufficient memory, it is worthwhile to me to load them. If you, too, have plenty of memory but no hard disk, loading frequently used files keeps you from having to swap floppies to find them.

The RAD: disk is a real time saver. To determine its size, edit the RAD: entry in your Mountlist; its size is specified using the BlocksPerTrack, Surfaces, LowCyl, and HighCyl entries. Increase or decrease HighCyl until your RAD: disk is just a little larger than necessary to accommodate your commands and scripts (any additional space is wasted.)

The IF NOT EXISTS RAD:C statement lets your system skip the directory-creation and copying steps if RAD:C already exists from a previous bootup that day. RAD: files typically survive a soft reboot, so including this code means that StartupII will usually have to copy files to RAD:C only once a day.

Step 2 assigns C: to RAD:C. The C: logical device is one of the standard places AmigaDOS checks for commands and is always on your command search path. This ASSIGN command guarantees that your system will automatically check RAD:C for commands. The PATH command adds the SYS:C and Utilities directories to the command search path; if you have other disk directories of commands you want to search, tack them to a PATH command here.

Step 3 does the same thing for RAD:S that Step 1 does for RAD:C. It checks for the existence of an S directory, creates it if one does not exist, copies files to it, and assigns to it the name S:. The S: logical device is where the AmigaDOS EXECUTE command looks for command scripts, and where a number of commands such as MicroEMACS look for their own startups. By copying these startups and scripts to RAD:S, you speed up the initialization times of the utilities. You can also keep other scripts in S: for quick access.

After C: and S: are ready, StartupII assigns a few other logical devices:

Step 4:

```
MAKEDIR RAM:T
ASSIGN T: RAM:T
MAKEDIR RAM:ClipBoards
ASSIGN CLIPS: RAM:ClipBoards
```

Step 5:

```
MAKEDIR RAM:Env
ASSIGN ENV: RAM:Env
SETENV Editor RAD:C/EMACS
```

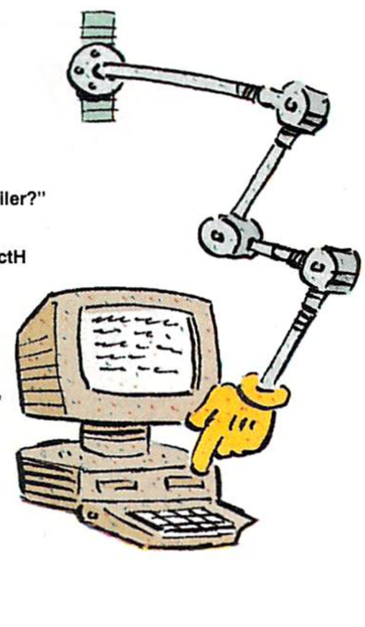
Step 6:

```
ASK "Want to setup the C compiler?"
IF WARN
ASSIGN INCLUDE: SASC:CompactH
...
PATH SASC:Bin ADD
ENDIF
```

Step 7:

```
ASK "Want to set up Modula-2?"
IF WARN
...
STACK 60000
ELSE
```

►



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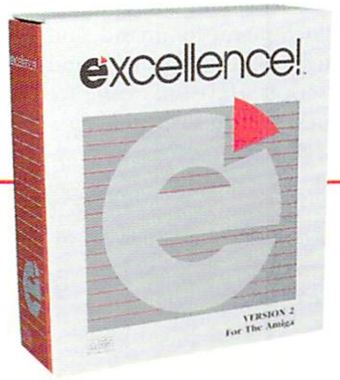
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```
STACK 16384
ENDIF
```

Step 8:

```
IF NOT EXISTS RAD:RexxDir
MAKEDIR RAD:RexxDir
... ; copy ARexx scripts in here
ENDIF
ASSIGN REXX: RAD:RexxDir
```

I added the T directory (Step 4), which compilers use for temporary scratch space, to RAM: rather than to RAD: because the RAM disk automatically resizes itself and because I do not need it to survive a reboot. I did the same for CLIPS: (which is where the Clipboard keeps "cuts" for pasting) and ENV: (where environment variable strings are stored). Because the RAM disk grows and shrinks as space is used and freed, it is perfect for temporary storage.

Step 5 puts a value—the name of a text editor—into the environment variable called Editor. This value determines which program the MORE command will invoke if I opt to edit a file I am scanning. AmigaDOS scripts can also use environment variables in IF and EVAL statements, so these are good places to temporarily store information for easy accessibility.

After these system-wide ASSIGN commands are in place, StartupII gets to the utility-specific ones. I use C and Modula-2 compilers a great deal, but not every day. In step 6, I made the C compiler optional so that I do not have to load it if I do not need it. My example in Step 6, SAS C (formerly Lattice C, SAS Institute), needs four ASSIGN commands (for the INCLUDE:, QUAD:, LC:, and LIB: logical devices) and requires that the directory containing the compiler be on my search path.

Because assigning these commands requires swapping disks on floppy-only systems, the conditional load statement lets me avoid unnecessary disk changes. The ASK statement in Step 6 prompts me and waits for a yes or no reply. If I enter the letter y, ASK returns the WARN command to the script and prompts IF to go ahead with the ASSIGNs. If I enter the letter n, the IF command is bypassed. This type of statement allows you to make conditional assignments, although you need to stay near the computer to enter responses while the computer starts up.

Incidentally, you can set up your own logical devices, much as SAS C does, to save yourself routine typing. Let's say you have a directory of spreadsheets called Dept1 nested two directories deep on your hard disk. Instead of typing

```
DH0:Spreadsheets/Personnel/Dept1
```

to access files in this directory from the CLI or Shell, set up a device using the following command:

```
ASSIGN SPD1: DH0:Spreadsheets/Personnel/Dept1
```

Then you can get a list of your spreadsheets at any time simply by entering:

```
DIR SPD1:
```

Step 7 goes through a similar process for the Modula-2 compiler. The one I use most frequently requires 60K of stack to run, so if I decide to load it, StartupII sets the stack size to that value; otherwise it uses a stack size of 16K.

Step 8 initializes a RAD: ARexx directory. ARexx is much more powerful than the CLI language, and there are a number of third-party programs that can use it. I put ARexx into RAD: for speed. I could even invoke an ARexx script for a trickier startup at this point.

After a few other ASSIGNs and SETENVs, my StartupII is almost finished. At last, the following RESIDENT statements remove the MOUNT and ASSIGN commands from memory and free up the space they occupied. BREAK 1 C then signals to the Startup-Sequence that StartupII is complete:

```
RESIDENT MOUNT remove
RESIDENT ASSIGN remove
BREAK 1 C
```

Commanding the Command Line

Once your system finishes with StartupII, it moves on to the Shell-Startup and CLI-Startup files. I prefer the Amiga Shell over the CLI, as the former supports ALIAS commands, command history, and a definable prompt. For that reason, I have concentrated on customizing my Shell-Startup file. Here are a few lines from it:

```
PROMPT "%S> "
ALIAS DEL DELETE
ALIAS RM DELETE
ALIAS LS DIR
ALIAS CLS ECHO "*E[0;0H*E[J"
...
```

These lines set the Shell's prompt to the current directory (followed by ">") and establish abbreviations for some commands. This prompt helps me keep track of which disk and directory I am in at any moment (I change directories enough to lose my place pretty quickly). Because I use MS-DOS and Unix for work, I assign to AmigaDOS commands nicknames that are similar to their MS-DOS/Unix counterparts. If you use VM/CMS or Unix, or just do not like to type, setting ALIAS commands at Shell-Startup can help you out.

The Shell and various Workbench utilities also allow you to do tool-specific initializations via Tooltypes set with the INFO Workbench menu command, and to use files in the S directory. You can start up and control others with ARexx scripts. Have fun exploring them and your start-up files, but be sure to keep a copy of an unmodified boot disk until you have everything just as you want it. ■

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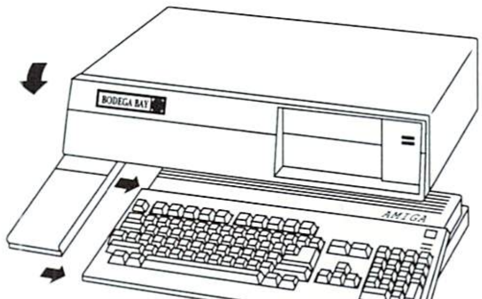
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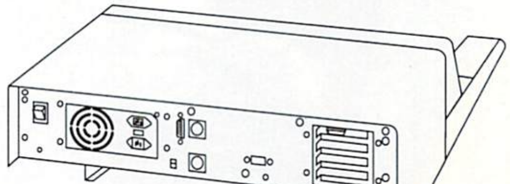


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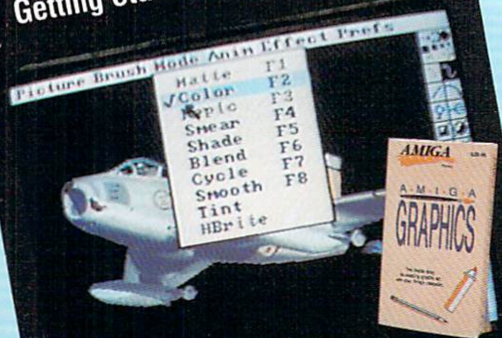
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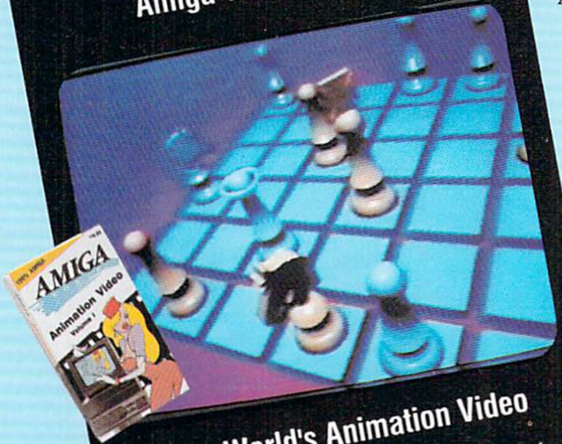
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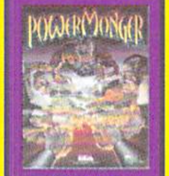
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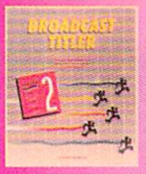
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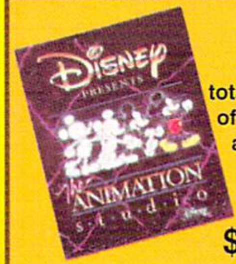
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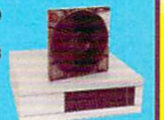
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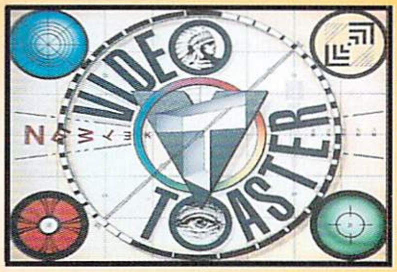
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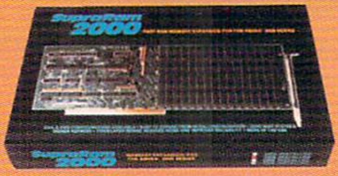
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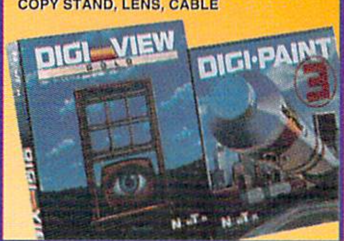
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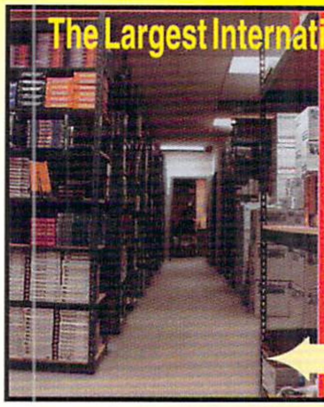
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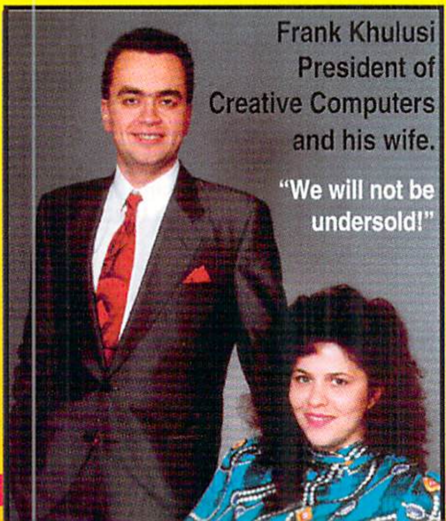
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ACCENT ON GRAPHICS

"Comic" Touches

You can have serious fun with these techniques for making a comic-book-style page of images.

#25

A continuing series of tips, techniques, and tricks for creating more imaginative Amiga graphics.

By Joel Hagen

RECENTLY, I'VE BEEN using the Amiga to produce a comics-style book as an art piece. The pages are not narrative in format: There are no dialogue bubbles, nor any literal continuity. I am shooting for a more abstract impression by giving the viewer a sequence of visual associations. The comics format serves this concept very well because many images can be grouped on a page in dynamic ways. The shapes, sizes, and composition of the image boxes are as important as the images themselves.

My main tools for this project are DeluxePaint (Electronic Arts), Digi-View (NewTek), and PIXmate (Progressive Peripherals). Working in 320 × 400 interlace mode, I created the illustration accompanying this column—like many of my comics-page pieces—to be horizontal in format. (I do, however, sometimes use DPaint's Full Page format to create vertical compositions.) I usually output the finished pages to an HP PaintJet printer and then mount them in an old photo album. In some cases, I may even stain the pages to "age" them.

As source material for my comic frames, I often use digitized images or previously created works of my own. Disregarding the colors in any source images, I create a palette with color groups that will contrast and harmonize well on my page. The palette for the present illustration has an eight-level gray scale, an eight-level spread from violet to flesh, a six-level spread from forest green to salmon, a four-level blue spread, and a four-level spread from red to yellow. Color zero is pure black, while color one is brown. To establish image areas, I paint white borders, using a square brush. Holding down the Shift key constrains the brush movement to straight lines.

Just Remap, Then Zap!

Black-and-white images make particularly good source material, as you can easily remap them by hand to new color ranges. You can reduce any image to black and white in PIXmate by selecting Extract Gray from the Color menu. For this project, I further reduced the image to an eight-level gray scale, using the Less Colors option. If necessary, you can reformat the image to the comics-page resolution.

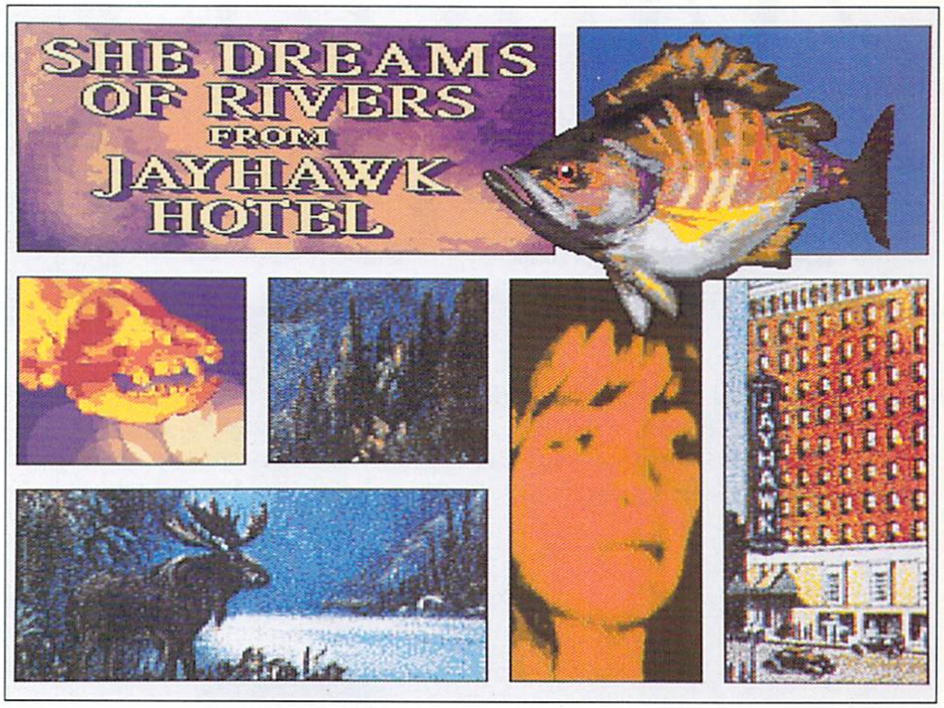
Moving over to DPaint, always load the comics page first to establish its palette and then load the gray-scale image on the spare screen. From the Picture menu, select Change Color/Restore Palette to bring back the comics-page colors; then select Remap. If your image is in eight-level gray scale, it will map to the gray scale of the comics-page palette. If it has more than eight gray levels, other colors may also become part of the image.

If you are satisfied with the image after this remapping, your work is finished. If you're not, you can remap it to other palette colors by hand for some interesting effects, as I did with the woman's face and the small red skull in the illustration.

To remap an eight-level gray image to the eight-level violet-to-flesh group, select the darkest gray as background color with the right mouse button and the darkest violet as foreground with the left. From the Change Color submenu, select Background-To-Foreground, BG>FG. The dark gray changes instantly to violet throughout the image. Select the next darkest gray as background and the next darkest violet as foreground.

Now press the a key (DPaint's repeat key) to speed up the BG>FG remap process as you continue through the entire gray scale.

If you want to map an eight- or sixteen-color image down to fewer colors, follow the same process, but change two or three original levels to each new level of your smaller range. I created the four-level skull in the illustration from a sixteen-level original in just this way. The advantage in hand mapping is selectivity. You can map images to different color groups to lend variety to the page. You can also skew shading and highlights through your remap decisions.



This comics-style page was created in DeluxePaint with the help of Digi-View and PIXmate. The illustration relies on both automatic and by-hand remapping techniques.

"Little Boxes, Little Boxes..."

One of the easiest ways to compose an image into a box is via the Stencil tool. Fill the box with a solid color not contained in adjacent areas. (I usually reserve color 1 for this purpose.) Bring up the Stencil requester, click on the chosen color, and then select Invert followed by Make Stencil. This is now the only area of the page that can receive an image. Go to the picture on the swap screen and cut out a brush larger than the area you intend to use in the comic. Return to the comics page by pressing the j key and move the image around in the Stencil window until you like the framing. Stamp it down and toggle off Stencil. Repeat this process for the other boxes.

With regard to composing the individual image boxes in our sample illustration, some specific techniques used may require further elaboration: The hotel image and the moose were digitized from postcards through the "forced-palette" techniques presented in an earlier column (see "Accent on Graphics" #12, p. 70, Feb. '90). Briefly, I loaded the comics palette into Digi-View, set Freeze Palette in the Palette requester, and digitized the cards. In the control panel, I set Sharpness at +10 to increase the color dithering. (If you are familiar with the earlier column, you will notice that the comics palette I built also follows the guidelines I suggested for a forced palette.) This technique provides pretty fair color fidelity in digitizing new images.

The fish image (painted in "Accent on Graphics" #11, p. 40, Jan. '90) was reduced in PIXmate from HAM to 32 colors. I used PIXmate's Match Palette function to map the colors to the comics palette and then shrank it using tools in the Display requester. (The Art Department from ASDG also performs these operations quite effectively, and I will be referring to this excellent new program more frequently in future columns.)

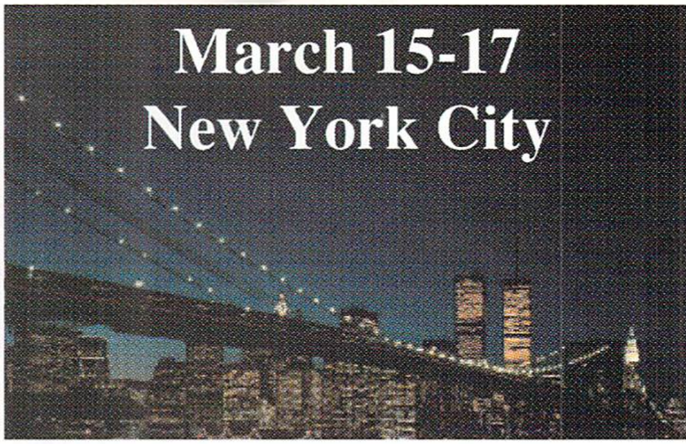
Bringing the fish into DPaint's spare screen, I picked it up as a brush, removing it from its solid-color background. To emphasize the edges, I selected black as a foreground color and pressed the o key to give it a single-pixel outline. I also used this same outline key on the title before extruding a drop shadow. I stamped down the fish last, causing it to break out of the borders.

You can get a lot of mileage from using 32 or even just 16 colors. There is a good variety of color in our illustration page, and I did not even make use of the gray-scale group in the palette. I like using non-HAM modes for this kind of project because the pixel-level color precision suits the comics style. Also, I often work in 640×400 high resolution for printout, which is not really possible to do in HAM. Try finishing a sequence of comics pages as a print project or a slideshow. ■

Joel Hagen's credits include work in art, astronomy, science fiction, and software development. Write to him at 10512 Sawyer, Oakdale, CA 95361. Please include a stamped, self-addressed envelope for a reply.

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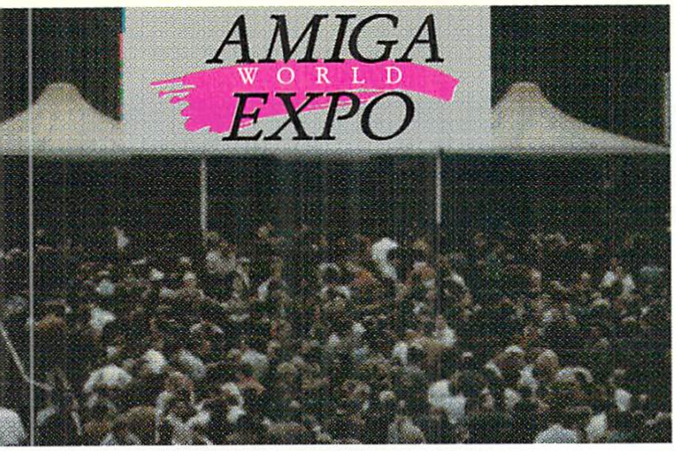
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Info from Icons

By David T. McClellan

PROGRAMS THAT RUN from the CLI have it easy. Whether written in Modula-2, C, or even assembly, they get all their arguments from one simple command line. Users are not too thrilled with this method, however, as they must either type parameters every time or write a CLI script to run such programs. Users prefer programs they can start from the Workbench by clicking on the application. How does a program keep the user happy and still receive arguments and other user preferences? It stores information in the program and data-file icons.

To root out such details, you must understand how information is stored in an icon. Create and save a short document file with Notepad, select the file's icon, and choose Info from the Workbench menu. The Info requester window opens, listing the type of the file (project), its default tool (the path to Notepad), and a scrollable list of Tool Types. The Tool Types are where your program stores and fetches extra information. Each Tool Type is in the form:

```
NAME=string of parameters
```

As in:

```
WINDOW=100, 10,400,100
FILETYPE=notepad|text
```

NAME is the name of that Tool Type option, and the string it equals represents the parameters the user or Notepad set. In the second example, the or-bar (|) separates two suboptions of the FILETYPE Tool Type. Now, select Notepad's icon and Info and you will see similar information—the file's type is Tool, it has no default tool (as it itself is the tool), and it has a list of Tool Types.

Modula-2 and Tool Types

The Workbench passes many kinds of information to a program. In C, the second (argv) argument is actually a structure full of information. In Benchmark Modula-2, you receive a similar package in the form of a WBStartup data structure. This structure tells the program its own disk path and which icons the program will receive information from. (I use the Benchmark Modula-2 MODULES and procedures in the examples, but the same methods hold true for the other languages.)

The WBStartup data structure consists of several useful pointers and fields: the number of arguments passed in, an array of pointers to WBArg descriptors for those mouse-selected arguments (icons), a message port for communicating with the Workbench, a pointer to the window that the Workbench opens for you, and a few more esoteric pointers. Take a close look at the following:

```
(* From the Benchmark Modula-2 Manual, Module Work-
bench *)
WBArg=RECORD
  waLock : ADDRESS; (* lock descriptor if arg is file *)
                    (* not in current directory *)
  waName : ADDRESS; (* ptr to name of tool/file/etc. *)
END;
WBStartup=RECORD
  smMessage: Message;
  smProcess: MsgPortPtr;
  smSegment: ADDRESS;
  smNumArgs: LONGINT; (* The argument count *)
  smToolWindow : ADDRESS;
  smArgList: WBArgPtr; (* Ptr to list of WBArg's *)
END;
```

Each WBArg struct to which the pointers in WBStartup.smArgList point gives the name, and possibly a directory lock, to a file. The first argument is always the name of the tool (program) itself; so smNumArgs always equals at least 1. (That name, by the way, is the filename without .info.) Using its own tool name from that first WBArg, and a couple of routines from the Workbench's icon library (icon.library), your program can look up options you stored in its icon with the Info Workbench menu command.

The program can dig similar information out of the icons of files passed to it in other WBArgs, as well. For example, Notepad keeps a preferred window size, a base font, and file type information in the icon of each saved document, and uses these when you start it via a document's icon.

Inside each icon is a DiskObject structure you can fetch using the icon's name. Part of that DiskObject is a list of Tool Types the program or Workbench's Info command sets. To load the DiskObject, your program calls the procedure GetDiskObject( ) with the waName field of a WBarg structure. Then you

can parse the options with two other procedures from MODULE Workbench: FindToolType( ) and MatchToolValue( ). FindToolType( ) looks up the string for a given NAME=Tool Type, while MatchToolValue( ) scans that string for |-separated suboptions and tells your program whether or not they are set.

For example, say you have a little Modula-2 program called Fred with an icon named Fred.info. Using Info, you stored the following Tool Types in Fred.info:

```
SCREEN=320×200
Prince=little|red|corvette
```

Fred wants to find out what screen size it should use and whether red is in its Prince Tool Type. The quick set of code fragments below accomplishes this.

```
MODULE Fred;
(* What you need to import for icon munging *)
FROM SYSTEM IMPORT ADDRESS, ADR;
FROM AmigaDos IMPORT FileLock, CurrentDir;
FROM System IMPORT argc, argv, WBenchMsg;
FROM Libraries IMPORT OpenLibrary, CloseLibrary;
FROM Workbench IMPORT IconName, IconBase,
  DiskObject, DiskObjectPtr, DiskObjectType,
  WBArg, WBArgPtr, WBStartupPtr,
  GetDiskObject, FreeDiskObject,
  FindToolType, MatchToolValue;
(* begin main module *)
1 CONST
  ScreenOpt="SCREEN";
  PrinceOpt="Prince";
  rdOpt="red";
2 VAR
  wbArg : WBArgPtr;
  wbStartup : WBStartupPtr;
  dObj : DiskObjectPtr;
  toolType : ADDRESS;
  isRed : CARDINAL;
  nArgs : INTEGER;
  formerDir : FileLock;
  BEGIN
3 IF argc=0 THEN
  (* called from Workbench. Open icon library*)
  (*look at own opts *)
4 IconBase :=OpenLibrary(ADR(IconName), 0D);
  IF IconBase=NIL THEN (* We're dead meat. Quit *)
    CleanQuit("No icon.library");
  END;
  wbStartup :=WBenchMsg;
  wbArg :=ADDRESS(wbStartup^.smArgList);
  nArgs :=wbStartup^.smNumArgs; (* # of 'parameters' *)
  (* Now check the program's icon's Tool Types *)
5 IF wbArg^.waLock # NIL THEN(* change dir to get *)
    formerDir :=CurrentDir(wbArg^.waLock);END;
  dObj :=GetDiskObject (wbArg^.waName);
  IF wbArg^.waLock # NIL THEN(* Change back *)
    formerDir :=CurrentDir(formerDir);END;
  IF dObj=NIL THEN (* Dead in the water no icon *)
  CleanQuit ("No icon ");
  END;
6 toolType :=FindToolType(dObj^.doToolTypes, ADR
    (ScreenOpt));
  IF toolType # NIL THEN
  (* Parse screen option string *)
  ELSE
  (* Supply a default screen *)
  END;
  toolType :=FindToolType(dObj^.doToolTypes,
    ADR(PrinceOpt));
  IF toolType # NIL THEN
7 isRed :=MatchToolValue(toolType, ADR(redOpt));
  ELSE
    isRed :=0;END;
  IF isRed=1 THEN
    (* red was set in Tool Type Prince *)
  END;
8 FreeDiskObject (dObj^);
  CloseLibrary (IconBase^);
```

First you set up the constants and variables. Step 1 contains string constants needed for FindToolType( ) and MatchToolValue( ). Step 2 holds the variables for the WBStartup, WBArg, and DiskObject data structures, as well as a pointer to the byte string returned by FindToolType( ) (toolType), a CARDINAL to hold the 1 or 0 returned by MatchToolValue( ), and a FileLock if the program has to change directories to load an icon.

In step 3, if a program is called from the Workbench, its argc (command line arg count) is 0. If argc ►

is not zero, Fred was called from the CLI and is entitled to complain.

Once Fred knows it was started by the Workbench, it must load icon.library to use the icon functions. To do so, it calls OpenLibrary( ) for the IconBase at step 4. Should the call fail, Fred calls CleanQuit( ), a routine further on in Fred (not shown here) that prints an error message and exits gracefully. After icon. library loads, Fred initializes the WBArg variable wbArg to the list in wbStartup and loads its own icon.

At step 5, the program checks to see if it needs to change the current directory to load the file's icon (if the waName string contains no path). If wbArg. waLock is not NIL, Fred uses CurrentDir (an AmigaDOS function) with wbArg.waLock to change directories to the icon's home. Then it loads the icon's DiskObject into dObj and, if necessary, calls CurrentDir again to switch back to the previous directory.

At step 6, Fred is finally ready to check the SCREEN Tool Type's setting. It calls FindToolType( ) with a pointer to the string SCREEN and the DiskObject's Tool-Type list, in dObj^.doToolTypes. If FindToolType( ) finds SCREEN, it returns a pointer to it so Fred can parse the size of the screen. If it is unsuccessful, FindToolType( ) returns NIL, leaving Fred free to choose a default.

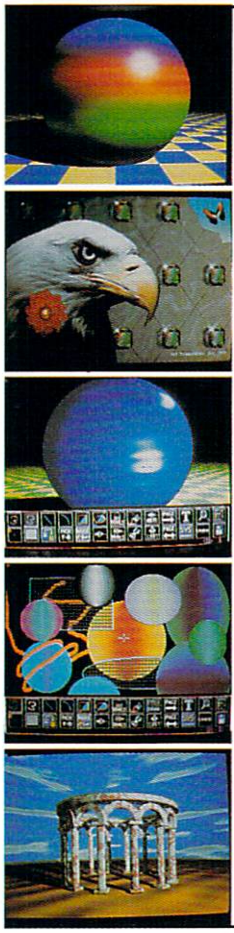
Now, in step 7, Fred must check to see if Prince exists and contains "red" as a suboption. Fred first gets the string for Prince with FindToolType( ). Then the program calls MatchToolValue( ) with the pointer returned by FindToolType( ) and red. If MatchToolValue( ) locates the suboption "red," it returns a 1; if not, it returns 0. Fred records the findings, performs any other necessary processing, and frees the DiskObject at step 8. That's all there is to it.

What's Your Type?

You follow the same steps to parse through a datafile's Tool-Types array. When you find each new DiskObject, you should check its type before continuing—dObj^.doType will be WBProject for data files, WBTool for programs, WBDrawer for directories, and other appropriate values. This check prevents your program from trying to display a drawer as a HAM image, for example.

To store your own values, you can (carefully) modify the Tool-Types list, allocating extra memory on the DiskObject's FreeList and copying values into it. Next, use the PutDiskObject( ) procedure with waName and waLock to store the DiskObject back in its host icon. Try this out to make your programs a bit more friendly. ■

David T. McClellan is a contributing editor to AmigaWorld. *Write to him at 104 Chevron Circle, Cary, NC 27513, or on GEnie as D.MCCLELLAN.*



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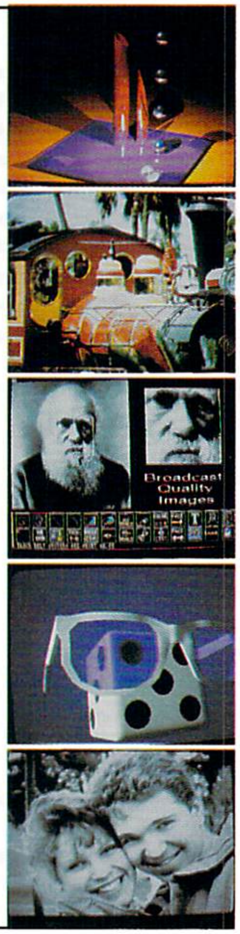
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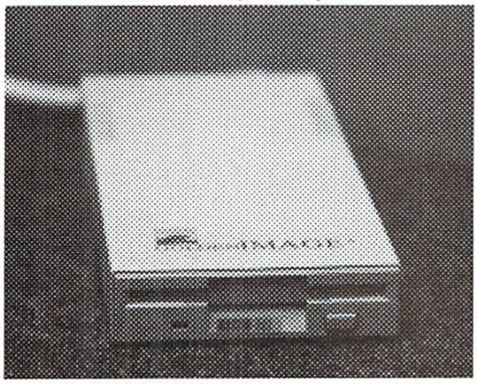
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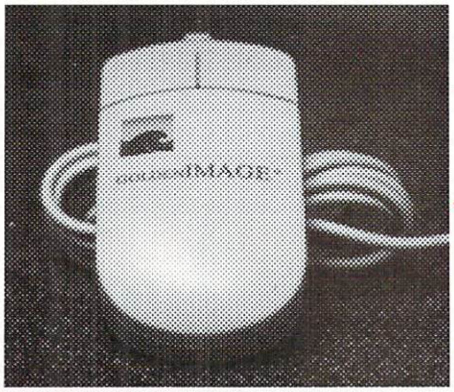


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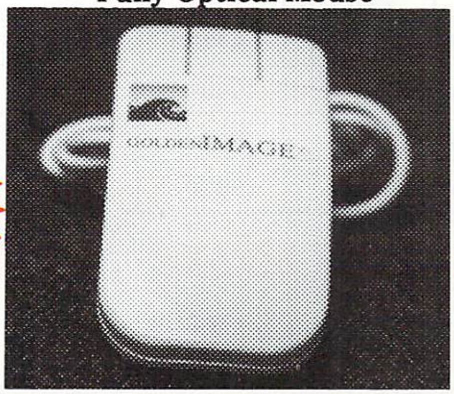
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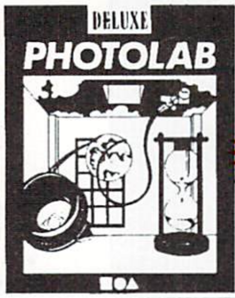
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"Sound" Sound Design

By Michael Hanish

IF YOU DOUBT that sound and music affect your perception of pictures, try this: Power up your television and shut off the volume. Then turn on some other sound source, such as the radio or a tape, and just watch and listen for a few minutes. You will find plenty of things that do not fit together. You will also find some surprising moments when the sound "hits" with the picture, and the rhythm of the images accents some beat or line in the music.

When incorporating sounds and music into your multimedia presentations, you need what is appropriate rather than incongruous. Whether your application is a simple slide show, a complex animation with sound effects and music, or a full-blown interactive piece, the same general principles and elements of sound design hold true. Although these guides are not hard-and-fast rules, it is helpful to have an understanding of them. Once you do, you can feel free to break them at will.

[For more specific details on sampling techniques, synchronization and the construction and use of sound tracks with specific presentation programs, please refer to some of these articles: "Now Hear This" (Mar. '90, p. 20), "Play It Together, Sam" (1990 Video & Animation Special Issue, p. 68), "Sizzling Sounds" (Oct. '89, p. 48), and "The 'Sound' of Music" (May '89, p. 16).]

The Power of the Minority

People take in through their eyes between 70 and 80 percent of the information they absorb. Because we are so visually oriented, we tend either to ignore or take for granted the effect and affect (quality) of sound. The impact is there to be felt, however, in ways both bold and subtle. To be effective, the would-be sound designer must begin to develop a vocabulary of sounds and an understanding of their qualities and influence on the listener.

Let's say you are using an interactive program to learn about railroad routes across the United States, and when you click the mouse button to move to the next display, the program responds with a banshee scream. Your most probable reaction is to be startled and confused, possibly also amused. If the program had instead responded with a simple click sound, you would merely have been reassured that something had happened.

Every sound carries with it a message. If that message does not fit the context of the presentation, the user will be confused, or at least surprised. Suppose a picture of an explosion appears on the screen, accompanied by a tiny pop sound. The contrast is one of the classic comic effects—perfect if comedy is your aim, disastrous if it is not.

Placing sound effects in an animation gives us another context in which to explore its uses and affects. Consider again the picture of an explosion. The first order of business is to sample the sound of an explosion, but how do you choose the right one? Keep in mind what you are trying to show and ask yourself: How large is it? When does the "big bang" happen? Does the sound happen indoors or outdoors? In a small or large space? Is it close or far away? What else is going on when the explosion happens?

The answers to these and other design questions will help you determine the qualities that the sound should have. The relative proximity of the explosion determines how loud the sound should be and where it should be placed in the stereo spectrum; the nature of the space will have a bearing on the amount of reverberation it should have. We may not get most of our world picture from our sense of hearing, but we generally know instantly if something is not quite right about a sound. If it does not accurately reflect what we expect, some part of our brain immediately brands it as wrong.

Hearing is not just a physical phenomenon; for every sound we hear, there are a range of psychological reactions as well. The study of this batch of responses is called psycho-acoustics, and it provides some very helpful insights into sound design. There are physical reasons, for example, why we hear low-pitched tones as "dark." For our purposes here, the physical reasons are beside the point; it is enough to know that low tones suggest ►

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darkness and high tones suggest light. Those not faint of heart can look into *The Sensations of Tone* (Helmholtz, Dover Publications) or *Psychology of Music* (Seashore, Dover Publications) for further information. Another good work, though out of print and hard to find, is *Music of the Whole Earth* (Reck, Scribners).

The premier program for preparing samples is AudioMaster III ($99.95, Oxxi), which can take care of all your editing needs, including setting loop points, adjusting pitch and volume, and removing unwanted portions of the sound. Two areas where AudioMaster III really shines are in constructing long sequences out of relatively short samples (by playing parts of the sample in a specified order) and in resampling (rerecording a sound at a lower sampling rate with no loss of fidelity, which saves considerable memory and loading time). Adding effects (such as reverb, delay, echo, flange, and so on) to a sample is best done in Synthia II ($124.95, The Other Guys), which, although primarily an instrument-construction program, contains a wealth of easy-to-use features.

Getting just the right sound for an effect can be slow, fussy work. Perhaps the greatest compliment that can be paid to such work is that no one notices it. Something is probably wrong with a sound when it stands out or is jarring.

On Finding the Right Track

The principles of designing a sound track for a multimedia piece are basically the same as those for individual sounds: You should know the purpose, understand the qualities you are trying to evoke, and pay attention to the effects of the sounds and their relationships to the visuals.

There are as many ways and reasons to use music in your piece as there are kinds of pieces, but before we launch into a survey of them, here is a brief philosophical aside about the nature of music and time. It can be said that music and sound define time. Have you ever noticed that time seems to pass much more slowly in silence than it does when there's a lot of sound and a lot of things going on? We perceive the passage of time by noting the number of events that occur. The steady metronomic ticking of a clock, if it is the only sound in the room, can make an hour seem like an eternity. Speed up the rate of clock's tick and eternity shrinks to an aeon. If you want to make it seem as though an event is passing quickly, set it to a full, busy piece of music, played at a quick tempo.

As Gene Brawn suggested in the first installment of Mastering Multimedia (Oct. '90, p. 80), I recommend that you consider using a piece of music to reassure the user that all is well while your presentation is loading, processing information, or otherwise working. Without reassurance, such a wait can be stressful and seem interminable.

The most common use of music in presentations is as a kind of underscoring, somewhat akin to highlighting passages in an article. Every movie and TV show uses music in this way, so you can learn a lot of tricks of the trade, good and bad, by just watching and paying attention. You know the boogeyman is about to arrive when you hear that low and ominous rumbling; you know that a chase scene is about to ensue when percussive, rhythmic music starts pumping; the big swelling of strings can only mean a happy ending and love fulfilled.

Using music this way is called telegraphing the action, and when it is done well and subtly, it is a thing of great beauty and even greater effect. Unfortunately, there are more examples of cliche out there than inspiration. Keep in mind that underscore works best when it is subtle and not constant. Actions need to be highlighted, but not thrown in the viewer's face.

The techniques of underscoring have not changed much since the time of silent movies, when a film's only accompaniment was music. Watch "The Kid" (Charlie Chaplin) or "Steamboat Bill Jr." (Buster Keaton) to see how those early masters did it. They were able to point up action and emotion in the story and at the same time provide musical flow to keep the scenes together and moving along. You can see how music foreshadows and makes comments on the action; you can also feel the power of silence.

Even a two-minute animation can suffer from music saturation. A constant barrage of sound can leave the viewer no room to react or take in information. Silence is your friend when designing a sound track, not something to avoid. Just as a properly placed sound can direct the viewer's perceptions and emotions, a moment of silence can have a profound and much-needed effect as a respite from the action or, through contrast, to point it up more strongly.

Contrast is another tool at your disposal. Remember that scene when the two main characters kissed for the first time, but instead of romantic music, you heard something quietly sharp and discordant as the camera focused on the man's face? Instantly, you knew that he had some other motive in mind than love. Instead of following the action, music in contrast to our expectations gives us a deeper insight into what is going on.

Pictures First, Sounds Second, Music Third

Once you have finished assembling the graphic elements of your presentation (both animated and interactive), it is time to add sound. By placing the sound effects before you set the music track, you will get a clearer idea of what space is available for music. You must also trigger the sound at the proper moment, and the means of doing this depend on the method of presentation you have chosen for your project. For some software suggestions, see "Picking the Right Program" (Nov. '90, p. 68). To the list presented in that article, I would add Animation Station ($99.95, Progressive Peripherals & Software) because of its capability for frame-specific triggering of sounds.

The composition program you use to prepare your sound track will largely be a matter of personal taste and the demands of the project. Again, these both vary so widely that it is impossible to make specific task-oriented recommendations, but there are a few things to keep in mind while planning. Will the presentation be a stand-alone (graphics and sound running in real time from the Amiga) or assembled in some other way (with video or audio tap, or a slide projector)? Will the sound track play from the Amiga's internal voices (at the same time the presentation program is running), external MIDI sound sources, or audio tape? Are sound effects incorpo- ►

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rated into the sound track?

For information on synchronizing the presentation with external sound modules, see "Mastering Multimedia" (Jan. '91, p. 76). Sound-track synchronization can be formidable. Keep your eyes and ears open for several things: memory requirements (if the presentation is to be a stand-alone, keep the samples small for efficient storage and execution); processor use (playing a sound track and effects while simultaneously running an animation can slow both); and, of course, timing. It is very helpful to make an outline (flowchart or storyboard) of the presentation, with notes as to where sound effects and music occur. Time the show to see where in the sound track you want "hits" to occur, where the mood should change, and where there should be silence.

Finally, try to avoid picking your favorite piece of music for a sound track just because you like it. Ask yourself how you want the audience to react and whether your choice will produce the desired effect. Above all, take the time to experiment and try something completely different. Sometimes experiments surprise you, producing more effective results than anything you could have planned! ■

Michael Hanish frequently writes for AmigaWorld *on multimedia matters. Write to him c/o* AmigaWorld *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

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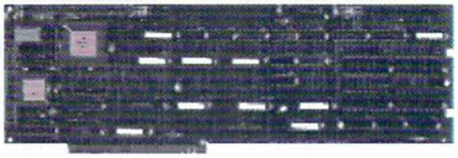
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ACCELERATORS



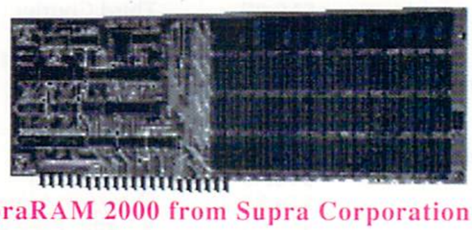
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Got a memory shortage? Take a look at the **BASEboard** from Expansion Systems. You can add up to 4 megs of RAM to your A500 and you won't have to tie up your expansion port to do it. **Price with 4megs $439.**

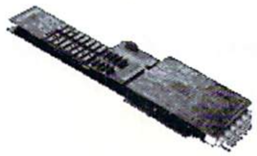
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VIDEO



Video Toaster from NewTek

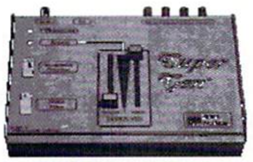
Tired of knowing more about Amiga video than the people you buy it from? It's not a comforting feeling. The technology is expanding so rapidly it's hard to keep up. So we've brought in some video experts. They can help you make the right selections and since all we sell has been pretested, your purchase arrives ready to run.

NewTek's **Video Toaster** is the most exciting video development ever. Digital video effects, character generation, color processing, dual frame buffering, and production switching are just part of all that it can do. But it takes some savvy to piece the products you'll need together. We have compatible TBC's and other products along with the knowledge to make it work. **Price $1,449.**

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And the **SuperGen** from Digital Creations is often the perfect solution. It touts broadcast quality RS-170A composite output, two independent dissolve controls, dual video outputs, and is software controllable. It has key output and a selectable 3.58Mhz Notch Filter. We test it before we send it and offer a 180-day warranty. **Price $669.**

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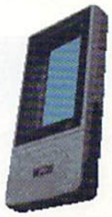
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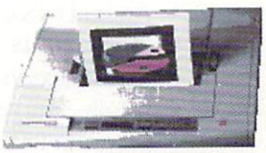
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Diconix from Kodak

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For crisp, professional results, consider the sturdy **Pinwriter 3200** from NEC. Its 24-pins can churn out 108 characters of smooth, near letter quality copy every second or a full 216 characters of draft copy. It comes with seven built in typestyles to give you the look you need. And with its optional paper feeder, it can handle cut-sheet paper as well as tractor-feed. From Briwall the warranty is 2 years. **Price $365.**

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Author Bob Ryan is an Amiga expert, formerly of AmigaWorld – he is currently at *Byte* magazine where he is Technical Editor.

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Author Louis Wallace is Senior Editor, Technology, of *AmigaWorld* magazine. He has specialized in Amiga technology since the first machines appeared, and writes for North American and European magazines.

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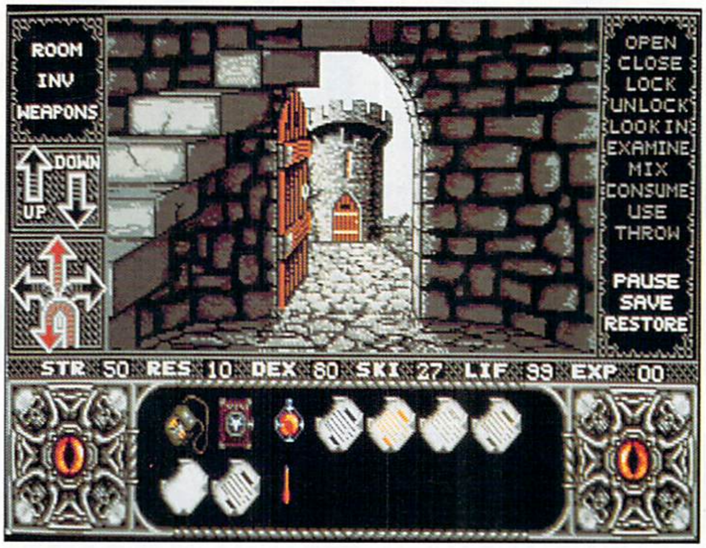
By John Ryan

You've seen her on late-night television: Elvira, voluptuous queen of the B-grade horror movies. Now you can see the lovely and captivating Elvira on your computer.

Elvira, Mistress of the Dark is an amalgam of role-playing and graphic adventure that places you in a eerie English castle; a castle inhabited by hordes of ghoulish adversaries and, of course, Elvira, playing the part of the castle's lone warm-blooded resident. Your job is to search for six keys to a special chest. Within the chest is a magical scroll that will prevent the former master of the castle from resurrecting herself to spread doom across the region. The problem: The keys are guarded by a bunch of nasty folks that would like to eat you.

From the start, Elvira sets the mood with gorgeous graphics that foreshadow what's in store for you in this cold, gray manor. Lonely courtyards, dank corridors, and tombs set the stage for this scary adventure. In addition to the somber, gray atmosphere that the graphics impart, mood music—appropriate to your location—is sure to put you on the edge of your seat.

Thankfully, the entire adventure is controlled with a point-and-click interface that is both intuitive and pleasing to look at. A view screen occupying much of the display is your window to a first-person-perspective world. On either side of the window are directional arrows for navigating the castle and a command menu for opening, closing, locking, or unlocking doors and containers. None of the other functions require a lot of guess work, either. Menu items become active depending on the situation you currently face.



A-okay, B-grade horror.

Each area of the castle is guarded by adversaries who must be dispatched before you can pass. Guards and monsters vary in strength and ability. As a result, many areas within the castle are nearly impassable until you hone the needed fighting skills to defeat the guardians.

You possess characteristics such as strength, dexterity, skill, and life points that increase as you progress. When you use weapons and armor, your skill in employing these items increases through on-the-job training: The more monsters you kill off, the better you get at fighting and surviving. When an altercation occurs, you have the option of either running away or letting loose with arrows or magic spells. If you wait too long, hand-to-hand combat occurs, and the only way out is either through victory or your own death. Hand-to-hand combat allows you to lunge, hack, thrust, or parry, and the computer tells you which you can do—decided by your health, dexterity and skill level.

If you are the queasy type, ►

Crib Notes

By Peter Olafson

THIS MONTH FINDS a party of adventurers standing in the darkness at the edge of *Dungeon Master* ($39.95, FTL). They have found the Firestaff on Level 7 and the Power Gem on Level 14 and figured out that they go together, but not what to do with them.

Use the staff and the bauble to get nasty with the Dark Lord on Level 13. He can't be touched by spells or ordinary weapons, but he can be very nicely "fluxcaged"—enclosed in forcefields—with the firestaff. As Chaos has a gift of slipping through imperfectly constructed fluxcage nets, use war cries to chase him into a corner, where you'll need a minimum number of cages, and lock him in. Your staff does more than cage mages, but I'll let you sort out the rest.

More cries from the depths:

Paul Diaz of Houston, Texas, asks if the RA key he's found has any significance. Yes, Paul, the *four* RA keys (on Levels 3, 7, 9, and 12) are vital to the liberation of the firestaff. Don't leave home without them. (Virtually everything in Dungeon Master is useful in some context—except lock picks.)

Bob Leonard of Hemet, California, doesn't say exactly where he's stuck, but his description suggests Level 8—a bad one. A full walk-through would be too elaborate for the column, but I can say a couple of things. Many levels in DM don't really require mapping. This one benefits from it. The Arena, as it's known, abounds in secret doors with obscure triggers; a map might help you get the big picture. One of the more devious doors is in the long corridor at the bottom of the maze. Follow it for 26 steps, then turn around and twiddle your thumbs for a minute. A secret door ►

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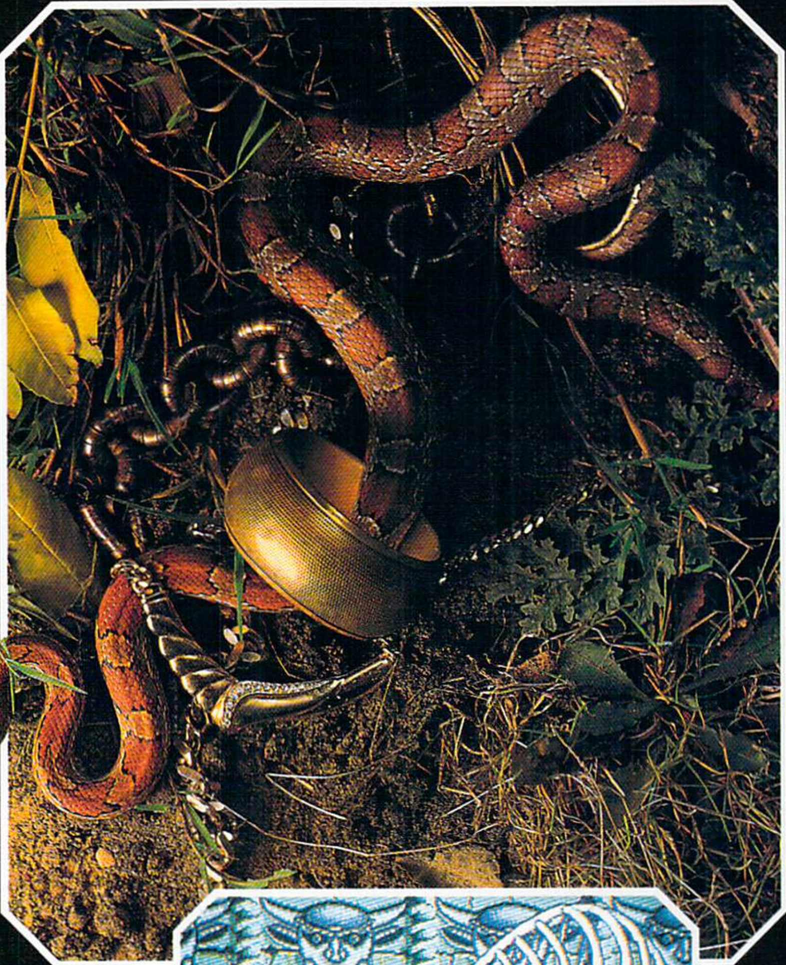
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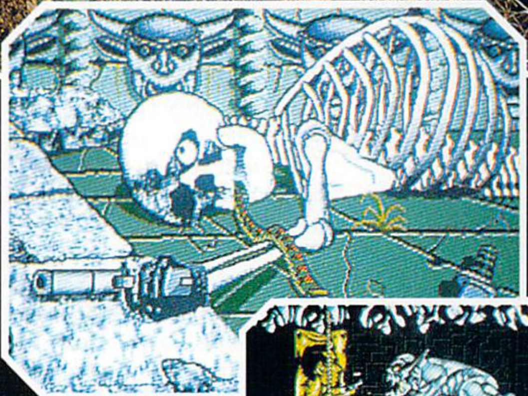
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then you may want to pass on this game. There's a lot of blood, guts, and gore, just as in a slasher movie. True to the genre that made the real Elvira famous, you'll be submitted to the spectacle of severed heads, slashed necks, plucked eyes, and more.

This is a huge game that spans five floppy disks; a hard drive will make your life much easier. The game's size directly relates to the hours of puzzles, thrills, frightening encounters, and butchery you're sure to experience. If you can't handle the blood, then you're free to do what any six-year-old would do: Turn your head. Don't turn away from the screen for too long, however, or you may not have a head to turn. *($59.95, Accolade, 550 S. Winchester Blvd, Suite 200, San Jose, CA 95128, 408/985-1700. One megabyte required.)*

PowerMonger

By Peter Olafson

In Populous, you led a God's life. PowerMonger, Electronic Arts' astonishing sequel, brings you back down to earth. You're in the army now, not behind the clouds, and a vast, lively world is out there for the taking.



Command your followers and conquer the rest.

The difference is that you don't just influence your followers, as in the earlier game, but command them. Each of the 195 rectangular segments of territory is static—no volcano-making here—but the little animated people inhabiting it can be persuaded, intimidated, killed outright, and, once subdued, bossed around. . .at least as far as a full stomach will take them.

From a humble beginning with 15 soldiers in a lonely tower, you must gather an army, supplies, and lieutenants, devise and appropriate weapons, and—by guile and force—take control of two-thirds of each region's population. Naturally, that population doesn't simply cave in; by the time you come to the first sizable town, you may find your force considerably overmatched. Better to talk or barter, perhaps.

You carry out your actions with the mouse in a splendid three-dimensional landscape abutted on two sides by about 20 icons and on a third by shifty-eyed warriors representing you and your subcommanders. Populous's broad, durable good looks have been replaced by greater detail and finesse. Sheep wander the hillsides. Pigeons fly the skies. Seasons change, and communities follow the year's cycle. The command set is simple but flexible, as it is tailored to context. For even more control, you can choose among three levels of aggressiveness.

What's truly God-like in PowerMonger is your control over perspective and access to detailed information. You can rotate the landscape in both directions and scroll across it in eight; zoom in and out through seven levels of detail; and summon three topographical overlays. Clicking on the query icon and an object summons a staggering amount of detail. Every character has a history. Births are announced. When the little people die, their souls fly up to heaven, and you can click on *them*, too.

Wondrous and hypnotic as all this is, PowerMonger has a good-sized learning curve, and it's a good deal tougher than Populous. In that game, you were an eagle, soaring over your domain, darting down to make adjustments to the landscape, but always having time to ride the wind and take prideful stock of your creation. Rest on your laurels in PowerMonger, and you'll watch your followers walk away in droves.

Consequently, the game can get rather labor-intensive. I'd have liked an option to assign a portion of the army to perform automated or semi-auto- ►

should open. (If you go too far, you're teleported back to the start.) Keep at it; the key to the exit door can be found on this level.

By the way, one of the dead-end down stairways you've stumbled onto here is the famous back or "express" stairs to the bottom level. I figure delivery boys use it to carry meat to the dragon. (You need a key at the bottom, natch.)

Finally, Lawrence K. Schwendeman writes that he's stuck before a closed door bracketed by forcefields in The Coward's Way section of Level 6. The forcefields are flashing teleports, but they might as well be solid walls for the difficulty parties have in penetrating them. They are rigged so that you can step into them when they're off and past them before they come on again. It takes a lot of patience and practice, but you can get through.

• Kenneth Russell of New York City sent in six questions about *Shadow of the Beast II* (Psygnosis, $59.99), echoing wailings and lamentations heard from others. Yes, that thin, grassy strip ahead to the right of the starting point (through the pygmy forest) is indeed the entrance to a tunnel—specifically a tunnel to the Crystal Caverns. It can be cleared using a time-honored arcade game technique (stomp on it until it breaks), but before you head downtown, you'll need an item that can be had from the green monster at the top of the stairs to the right.

Do destroy the large rock you'll find by the acid pool, but not by dropping it in the acid, as you need part of it. Instead, drop it on the far side of the pool, where it will break on a spike. What's left is the key to using that "broken" elevator.

The business with the sleeping demon and the caged monster in the pit is one of the toughest spots in the game. The key is to get into the pit without bothering the sleeper; it seems to be a matter of positioning on chain and beside the table. Then cream him, and while he's gathering his wits, hit the lower switch and jump back on the chain. (If the demon first hits the upper switch to raise the chain, you'll have to restart. The pit is inescapable, and the monster is ►

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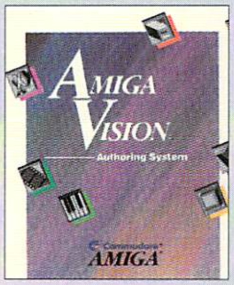
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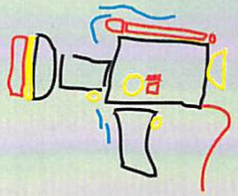


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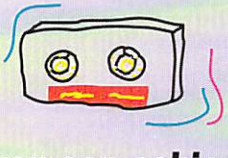
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mated supply duty. Power-Monger is far too much fun to spend it rummaging around barns hunting up tomorrow's breakfast. *($49.95, Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404, 415/571-7171. No special requirements.)*

AWESOME

By Rob Lawrence

Never have I encountered a game so aptly named as Awesome. The graphics are awesome, the animation is awesome, and the music is—you guessed it! A typically impressive Psygnosis masterpiece, this game truly lives up to its title.

A three-disk odyssey, Awesome was developed alongside Shadow of the Beast and Beast II, and many of the trademarks of that famed duo are apparent in this game as well. The differences here are the space-age setting and the story, which, unlike the action, is fairly simple. In a nutshell, your job is to do some serious planet hopping to obtain money and fuel for your escape from a galaxy that's about to become toast. As you journey between worlds, you'll have to ward off suicidal pirate craft, smash asteroids, vaporize space serpents, and then deal with the hoards that await you on the surface of each planet.

You have a top-down perspective in most of the space sequences, except that it's a ►

practically invincible.)

No single password will take you past the dragon head guarding the gate to Barloom. Like some other in-game instructions, this one varies from game to game. You should get the right password by freeing Ishram's guest. He's sacked out, and you'll need to give him a nudge.

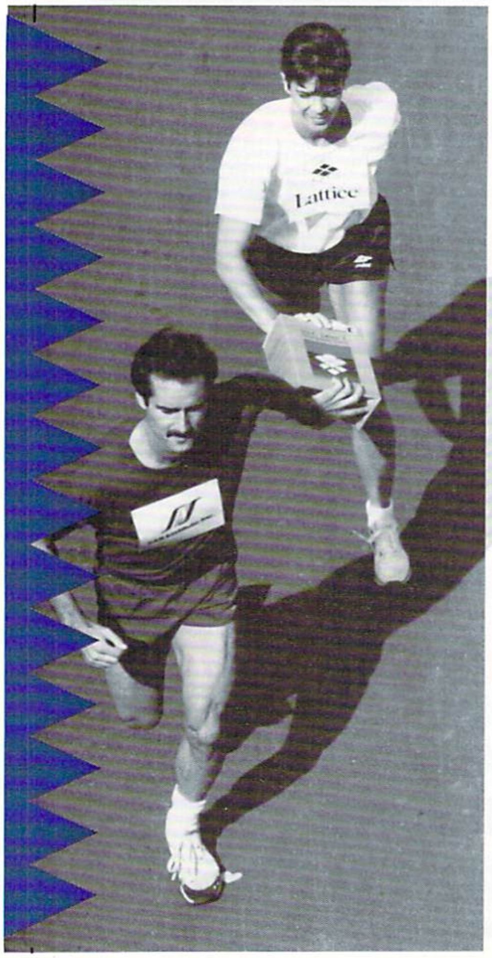
The jug you'll find in the Karamoon Oasis will prove useful as a mickey a bit later, after you're captured. (Yes, captured.) The proprietor will utter banalities about characters in the game, but he never told me anything I didn't already know. Yes, it does look as though there's more to the right side of the inn, but if so, it's nothing crucial to the completion of the game.

On the other hand, the old man is a critical element in your quest to defeat Zelek. You'll find his ring nearby after you escape your cell in the goblin realm. To help you, he also needs an item you should get from Barloom after killing Ishram.

• James Scott of Beverly Hills, California, is also fishing for a hint to help Leisure Suit Larry get across the piranha-infested river on Nontoonyt Island. I suspect it's a matter of "vine"-tuning. You'll need to start near the big gray rock, and instruct Larry to swing on a vine. Once he's up, have him swing on the next vine, and so on. Oh, and don't forget to tell him to let go when he reaches the near shore.

• Errata: Back in the November '90 issue, I had tipster Graham Kinsey suggesting a 200 mph jump speed on "The Ski Jump" track in *Stunt Track Racer* (MicroProse, $39.95). In fact, he was referring to "The Big Ramp" track. Anyway, the tip is also good for The Ski Jump, and try around 170 mph for the shorter jumps on the other side of The Big Ramp.

If you need help with a game before then, you can reach me at 12 W. 104th St., Apt. 3E, New York, NY 10025, or via E-mail as P.OLAFSON on GEnie and as Peteroo on Plink. Send a self-addressed stamped envelope for a personal reply. ■



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Amtrac Trackball 79
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Copy Stand 69
Ece Midi 1000 52
Ece Midi 500/2000 52
Ergo Joystick 17
Gravis Joystick 37
Modem cable A1000 15
ModemcableA2000/500 15
Mouse pad 9
Printer cable 2000/5001 ...5
Printer cable A1000 15
Video int. A500 a 65

CAD

Draw 2000 183
Home builder cad 129
Home builder choice 53
Home Buildr library 79
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Intro Cad Plus 99
Pro-Board 399
Pro-Net 399
Ultra Design 269
X-CAD Designer II 97
X-CAD Designer Pro 215

COMMUNICATION

Online 44
Atalk III 65
Online Platinum 67
BBS pc 96
Skyline BBS com 99

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Dbman V 189
Super base 52
Superbase pers. II 99
Superbase Pro. 3.0 219

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Prowrite v3.0 99
Professional Draw 129
Publishers Choice 69
City Desk 2.0 135
Word Perfect 149
The Works Platinum 164
Professional Page 175
Excellence! 2.0 179
Gold Disk Office 189
Professional page 1.3 ...199
Page stream 2.0 199

EDUCATION

Adventure of sinbad 32
Aesop's fables 32
All about America 35
Animal kingdom 32
At the Zoo 27
Decimal dungeon 32
Dinosaur Discov. kit 29
Discovery game math 25
Discovery game spell. 25
Fraction action 32
Intellitype 35
Kid talk 35
Kinderama 32
Learning curve 52
Letters For You 28
Master type 25
Math Odyssey 33
Math talk 35
Math talk fraction 35
Math wizard 35
Mavis beacon typing 33
Numbers Count 28
Project Master 129
Puzzle Story book 29
Read & rhyme 32
Read-a-rama 32
Rhyming note book 30
Spell bound 25
Speller bee 35
Tales from Arabia 32
Talking Animator 34
Where in the U.S. 35
Where in World C.S. 32
Where inEurpe.C.Sdiego 35
Wordmaster 32
World Atlas 39
World Odyssey 33
Your family tree 32

FONTS

Calligrapher 85
Fancy 3d fonts 52
Font set I 22
Headline Fonts 54
Headlines 2 47
Inter font 76
Kara Anim font 1 35
Kara Anim Font 2 35
Kara fonts color 50
Kara fonts Headline 2 48
Kara fonts subheads 48
News letter fonts 29
Page Stream fonts 1-15 ..29
Profonts I Prof. 23
Profonts II decorative 23
Studio font 29
Subheads 47

GRAPHICS & VIDEO

DCTV 439
3-Demon 73
3d options 35
3D Professional 299
Animagic 95
Animate 3-D 99
Animation editor 39
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Animation Flipper 32
Animation multiplane 58
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Animation Station 69
Animation Studio 111
Animation Titler 59
Animation w/images 89
Animator apprentices ..185
Animotion 65
Architectural Design 23
Art Department 59
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C light 3d editor 39
Caligari 159
Can do 99
Chroma paint 48
Comicsetter 65
Credit text scroller 29
Deluxe Paint III 102
Deluxe photo lab 102
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Design 3-D 67
Designasaurus 32
Digi paint 3 69
Digi View Gold 4.0 131
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Elan Performer 41
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Fantavision 42
Future design 3-d 23
Human design 3-d 23
Int. design sculpt3d 23
Interchange 32
Invision 109
Lights Camera Action 49
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Movie clips 29
Movie setter 65
Page flipper fx 95
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Photon Paint 2.0 97
Pixmate 43
Print master plus 33
Pro video plus set I 83
Pro video plus set II 83
Pro Video Post 220
ProVideo Gold 163
Scene Generator 29
Sculpt 3-d 64
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Super Clips 22
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Tv Text Prof. 111
Tv-show 2.0 64
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Video effects 3d 121
Video scape 3-d 120
Video titler 95
Vista 69
Zoetrope 89

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A3000 Internal Drive 99
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Amigen 153
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Baud Bandit level 5 155
Color Splitter 120
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rear view when you're battling serpents. The effect is much like playing Sega's Space Harrier. Once you're on the surface of the planet, you skim rapidly over a massive network of suspended platforms and walkways, battling aliens as you go. At the landing site, you leave the ship to search on foot for the entrance to the underground complex. Once inside, you can sell cargo, buy weapons, take on new contracts, and plot your next destination.

Awesome's sterling graphics and animations outshine those of most coin-ops. Scrolling is usually multilayer through 360 degrees. The assorted hi-fi stereo sound tracks are a definite two thumbs up. Unfortunately, however, the sound effects are mixed in, often blocking the percussion. The game is a shoot-'em-up at heart, but strategy is required to select weapons and courses. Difficult? I enjoy a fairly tough game, but Awesome really put me through the ringer.

If I were to revise this one, I'd try to make the space battles less cramped; I crashed into twice as many ships as I shot. The manual is quite brief, copy protection is very heavy, and disk loads can drag on. A second drive helps; a hard drive doesn't. Other than that, I can't fault the game. *($59.99, Psygnosis Limited, 29 Saint Mary's Court, Brookline, MA 02146, 617/731-3553. Joystick required.)*



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By John Ryan

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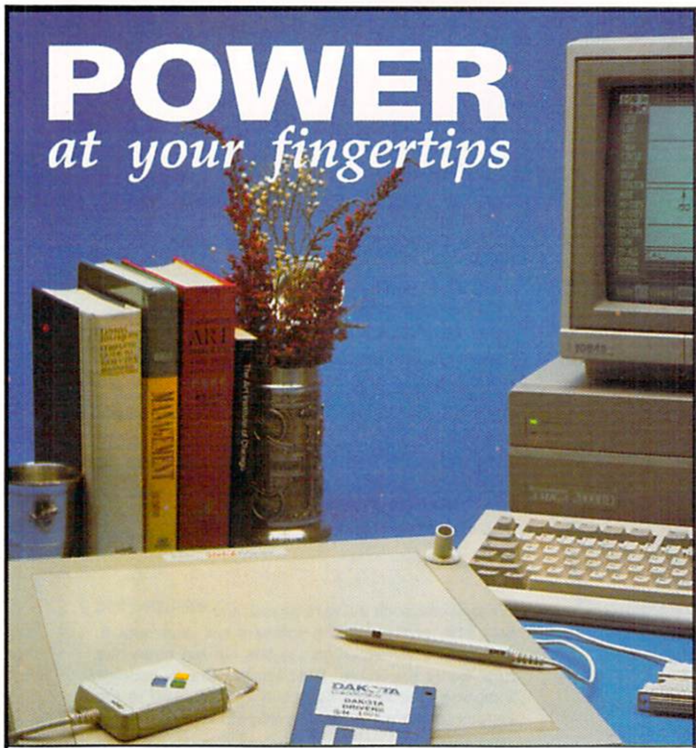
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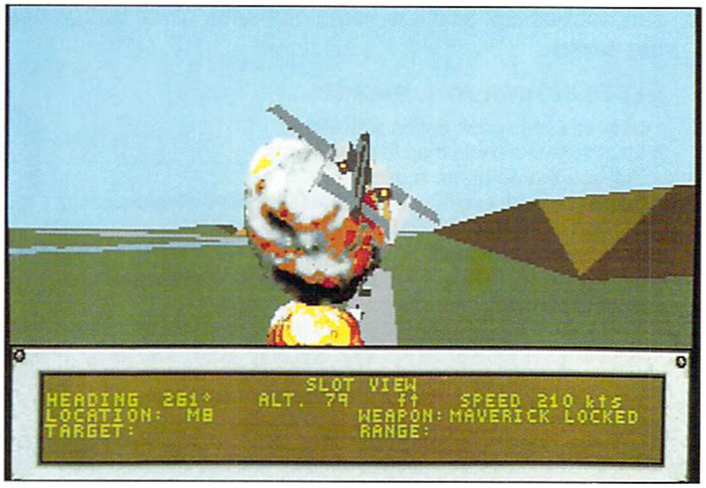
tance work, you can rely on "fire-and-forget" Maverick missiles, a tank commander's worst nightmare.

Although you can fly individual sorties, the campaign mode is A-10's bread and butter; here you must accomplish seven different missions in succession. Your success or failure in each will affect the outcome of the war raging on the ground below you. If you fail to take out a primary objective, allied ground forces may face annihilation; consequently, your next mission in the campaign may also be more difficult.

You select the missions, receive your orders, and arm the A-10 through a series of nicely digitized screens. Radio messages from battlefield commanders, other pilots and your commanding officer flash periodically on the screen, detailing possible targets and trouble areas. Other messages can be emotional pleas for help by a unit pinned down by tank fire. You can hear the sound of explosions and far-off battles through the low roar of the A-10's engines; if you don't act in time, a key allied unit—or even the entire battle—might be lost.

Flying the A-10 is relatively easy; gone is the usual plethora of keystrokes. The cockpit display is a digitized version of an actual A-10.

Your job is close air support, which often means flying into a battle zone at tree-top level while you are executing evasive maneuvers that would make even the most seasoned flier cough it up. Terra Firma, as it seems, is your worst en-



Fly carefully, or *you'll* be the fireball.

emy. Not paying close attention to your altitude and pitch will kill you as surely as any SAM or MIG.

The graphics are nicely drawn and convey a real sense of flight and movement in relation to speed. You can view your flight from several different angles. The game's robust graphics, however, can also be an irritant. A stock Amiga system just doesn't have the horsepower to push the high-speed graphics this simulation requires. While you can reduce the amount of detail, even the lowest setting can seem sluggish and unresponsive. A hard drive will speed up play for you by shortening disk-access time.

A-10 is as enjoyable a simulation as I've played in many months, but it's not without its annoyances. For example, there is no option to rearm the aircraft once the battle begins; if you run out of weap-

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ons—too bad. Moreover, every campaign game includes a mandatory training session that can take 10–15 minutes to complete. After 20 such sessions, you will soon tire of this constraint.

A-10 Tank Killer imparts a wonderful you-are-there feeling; the outcome of battles and the fate of troops lie in your hands. The war rages on. . . *($49.95, Dynamix, 99 W. 10th, Suite 337, Eugene, OR 97401, 503/343-0772. No special requirements.)*

BLACK GOLD

By Peter Olafson

Arcade sequences will probably be around as long as there are computer games simulating big business. No one really wants to linger over a spreadsheet; it's a little too much like the real world. You have to hand it to Black Gold, an oil-drilling simulation from Electronic Zoo; it never gets bogged down with figures.

You run an oil company in competition with three human or computer opponents via an interface clean enough to eat off. Icons bracket a graphic of your office: a telephone to receive disaster reports and supply-contract offers; a briefcase to tackle oil field fires; a desk drawer for sabotage against rivals; investigations to protect against sabatoge; your balance sheet; a map for a look at the big picture; a newspaper for the big event of the moment; and a computer (where you'll spend most of your time) for everything else. Missing, oddly, are oil tankers and oil spills. Don't these guys read the papers?

Black Gold has a good deal of detail to be tickled with. You choose a company logo and your office decor. Plus, you can choose between four game lengths. (A requester to set difficulty levels for the three arcade games wouldn't have been a bad idea, either.) Your computer is an Amiga, complete with clickable icons and closable windows—and a "Games" disk in the floppy drive. The graphics are almost all pleasing to the eye, and the music is jaunty and tuneful to a fault.

The three action sequences—the only real occasions for disk access, by the way—are basic, colorful, and playable enough. One that you'll be repeating a lot at the start involves simply keeping your drill bit within a set of concentric circles. Another has a little man running all over creation to dynamite burning oil rigs, with the amount of dynamite tuned to the size of the flames. Best, and most difficult, is a brisk, pipedream-ish game in which you must race the computer to build an oil line between two points while avoiding obstacles. All three of these get monotonous after a bit, but once the money's flowing, you can pay specialists to perform two of the tasks.

Gameplay in all three sequences, however, is rather removed from real field tasks in the industry, and the games aren't sophisticated or authentic enough to feel like extensions of the main strategic portion of the game. They are interludes rather than true subgames.

After a few hours of keeping my drill bit centered, I was hungry for a spreadsheet. *($39.95, Electronic Zoo, 3431-A Benson Ave., Baltimore, MD 21227, 301/646-5031. No special requirements.)* ■

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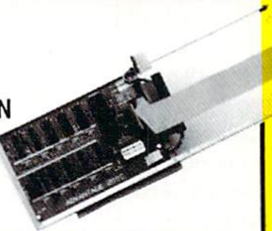
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From p. 20.

get you started, plus a 23-page tutorial explaining the many potential paths and mathematical principles the program utilizes.

Rendering an image can take a long time, depending on the resolution and whether you have a 68881 or 68882 math coprocessor. The double-precision Math (IEEE) version of the program speeds things up greatly (even more so if you have 32-bit RAM and a 68030 accelerator). One of the included tutorials describes a method for testing your formulas using only one-quarter of your screen for viewing. Another way to reduce drawing time is to increase the Sample Delta, although by doing so you sacrifice image quality. Still, these methods allow for quick viewing until you get the hang of it.

Let's Get to the Plot

Essentially, there are three Plot modes—Simple, Contour, and Perspective. Simple mode plots functions of one variable, with values shown as different heights on screen (useful for discerning mathematical relationships, but not visually impressive). Contour mode plots functions of variables with values shown as different colors. Depending on the formula and function values, you can create some amazing images—make sure you save them. Perspective mode plots functions of variables in 3-D. These typically take the longest to plot and are not as rewarding as Contour plots.

MathVISION offers numerous save options—Formula, Picture, Text, and Picture & Formula. Displaying pictures from just a formula takes a very long time. If you save your images under the Picture & Formula option, you will cut down loading and display time drastically. In addition, you can display your picture via other programs or modify the formula in MathVISION to be drawn anew.

There are many other elements of MathVISION that deserve attention. The program provides extensive ARexx implementation, and the manual includes five pages devoted to writing ARexx programs for MathVISION. You can use ARexx in conjunction with MathVISION to plot functions unattended or to do animations. MathVISION also offers numerous "hooks"—auxiliary programs that provide additional capabilities. Several of these—including Mandelbrot, HAM, and Divide and Conquer—come with the three-disk package. If you are a C programmer, you should have no problem writing any number of others to suit your needs.

The detailed, 100-page manual offers plenty of tutorials, while the numerous ReadMe documents on disk provide even more explanation of features not fully covered in the manual. There is also a glossary, which should be a helpful for novices, and a reference section covering all menu options.

While the prospect of having to draw and color by numbers with mathematical formulas and functions may not appeal to some otherwise-creative Amiga artists, I fervently recommend MathVISION to all adventurous individuals who wish to explore the unknown.

The Limelight

I highly recommend both FractalPro and MathVISION, with each program sharing the spotlight for different features. For Overscan, MathVISION shines, but for animated fractal imagery, FractalPro steps into the light with greater ease of use—unless you are ARexx-adept at preparing animation scripts for MathVISION. On numerous occasions, I received excellent technical support from both MegageM and Seven Seas Software, including return calls when I had to leave a message.

The accompanying illustrations do not truly reflect the visually stimulating potential of the imagery output of both these programs, as color cycling and animated sequences add virtually surreal dimensions to your Amiga screen.

FractalPro
MegageM
1903 Adria
Santa Maria, CA 93454
805/349-1104
$89.95
No special requirements

MathVISION
Seven Seas Software
PO Box 1451
Port Townsend, WA 98368
206/385-1956
$197
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McGee

Katie's Farm

For the smallest Amiga.philes.

By Doug (and Lauren) Barney

AT *AMIGAWORLD*, MOST packages for review are dropped onto our review editor's desk. While passing by, I happened across McGee and its sister product, Katie's Farm, and commandeered the pair. Knowing my daughter was a few months below the age recommendation—two to six years—I was uncertain as to whether I should share it with her. She does like computers, however, so I took McGee home for testing on my trusty A1000



YOUR TURN!

McGee is wonderful for language formulation; the children love to devise stories and talk about what's happening. It holds their attention because they love to go over the same things again and again, especially the part where the mother wakes up momentarily—they keep trying to see if she will get up!

Arliene Reich
Cedarhurst, NY

and was curious to see how she would react.

What a hit! After loading Workbench and double-clicking the program icon, we were sitting in front of the title screen where we first meet a terrific young character named McGee. Before the screen fades, the little guy's digitized voice says, "Hi. I'm McGee." Your mission is to help McGee make it through his day. After he gets up and rubs his eyes, your child selects what he will do next. With your child's assistance, he could say hello to Bunny Rabbit, ride his horse, throw a ball, or head into another room.

McGee is entirely mouse-driven and requires no reading skills. By simply clicking on one of four boxes at the bottom of the screen, your child selects one of four possible scenarios. Click on the box with a picture of a toy, for example, and the screen changes to display McGee

playing with that toy. One section of the panel is highlighted when the cursor is over it, making it easy for your child to control the program herself. It's a simple concept with uncomplicated execution.

The program's simple, clean graphics are highly effective. Although rudimentary, the animations are more than adequate for young eyes. The real attraction is the program's high-quality digitized voices and sounds.

Down on the Farm

My daughter joined me at the office to play Katie's Farm because the program requires 1MB of RAM, and my domestic A1000 has only a scant 512K. Katie's Farm offers more choices, more speech, and more outcomes to individual choices, selected repeatedly—hence the larger memory requirement. As you may have guessed, this second offering in the McGee series takes place at cousin Katie's farm. McGee drops by for a visit, and together they explore the barn and yard. The mischievous pair climb fences to get a look at the horse, wander through the henhouse gathering eggs and chasing chicks, and pick raspberries, although Katie does all the picking while McGee eats whatever she picks.

Neither program is copy-protected, so you can install them on your hard drive—they run a bit slowly from disk. The manuals for both are almost entirely devoted to the concepts behind the software, which is fine, because you really don't need much assistance to run the programs successfully.

Because both programs are available on the Apple II, Macintosh, and IBM PC, as well as the Amiga, they are not designed to take full advantage of the Amiga's power, such as the ability to drive truly sophisticated animation. My daughter, however, didn't complain.

McGee
Katie's Farm
Lawrence Productions
1800 S. 35th St.
Galesburg, MI 49053
800/421-4157
$39.95 each
One megabyte required for Katie's Farm.

IllumiLink

That rosy glow from control.

By Morton A. Kevelson

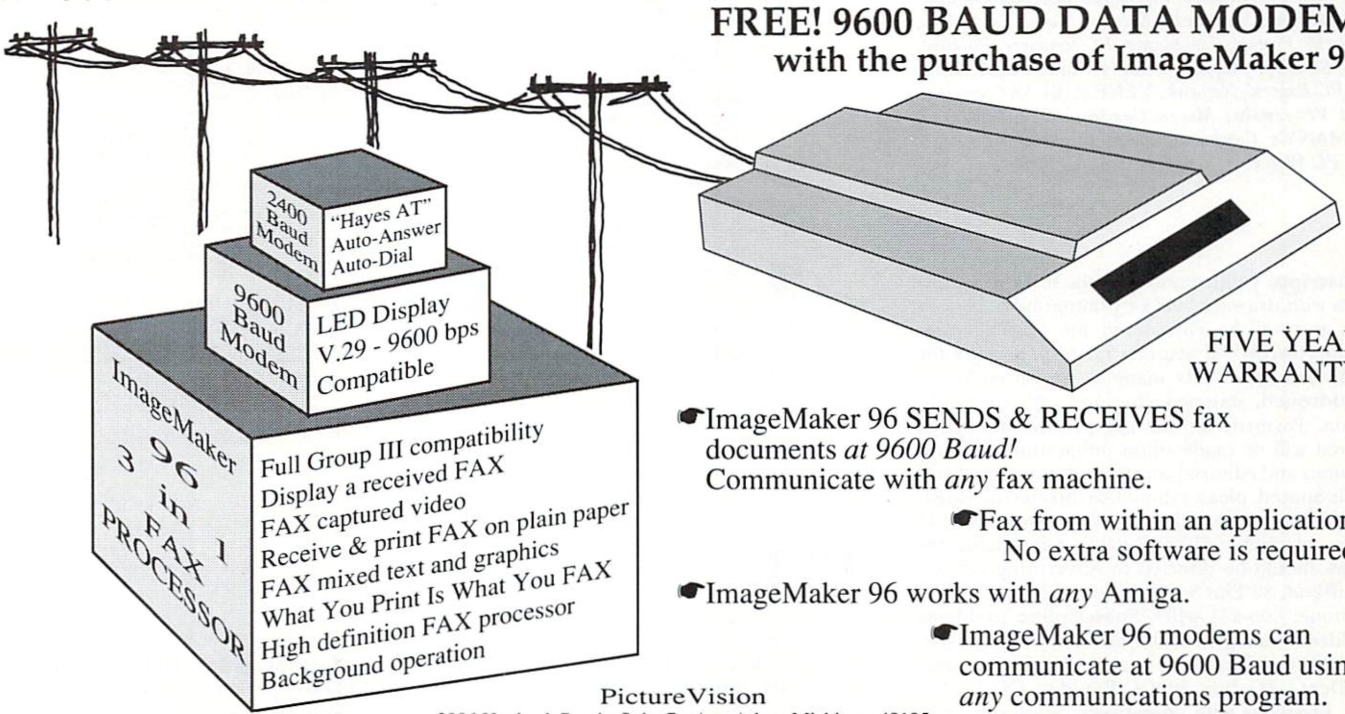
THE INEVITABLE HAS finally happened: Someone has come up with a way to turn your Amiga into a programmable infrared remote controller. IllumiLink, from Geodesic Publications, lets you replace a fistful of hand-held remote controls for your hi-fi, television, VCR, and the like with a single, multitasking Amiga. You may notice some obvious disadvantages to this arrangement—not only is the Amiga a lot bulkier than even a dozen hand-held remote devices, but it would take a whole lot of AA batteries to make the system portable. On the other hand, the Amiga is not likely to get lost between your sofa cushions...

IllumiLink's hardware consists of a plastic pillbox that plugs into the Amiga's second joystick port via a sturdy, six-foot, shielded extension cable. Geodesic has managed to squeeze a lot of functions

Continued on p. 97.

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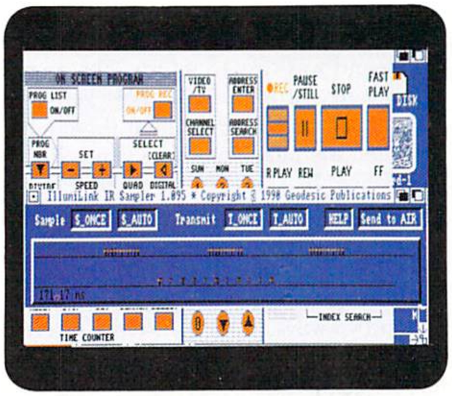
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From p. 95.
into this diminutive package. The unit contains one infrared (IR) light-emitting diode (LED) to generate the signals your equipment senses and another LED that glows with a visible yellow light to let you visually confirm that the unit is active.

Geodesic designed IllumiLink to record and play back IR control signals modulated at 40 KHz. The unit's IR detector senses the signals from your individual remote controls so you can program your Amiga to reproduce them. The package also includes a stand-alone IR LED, complete with a phono plug and attachment velcro, for remote installation. You can plug this LED into a miniature stereo headphone jack on the side of the pillbox via a suitable cable and adapter available from Radio Shack.

The pillbox also has a standard modular telephone jack and built-in tone decoder, giving you remote control over your Amiga via a cordless telephone. If you do not have a cordless phone, it is possible to use a standard touch-tone instrument as a remote unit by following



Let Amiga be your remote controller.

the manual's instructions. (The modular telephone jack on the IllumiLink is not intended to connect with a live telephone line.)

YOUR OWN DEVICES

IllumiLink's software consists of two modules, the IR Sampler program and the Amiga InfraRed (AIR) Windows program. The IR Sampler allows you to record and modify signals from a remote device so that IllumiLink can duplicate its function. The recording process is similar to that of conventional universal remote controls. Simply place the remote opposite IllumiLink and press a function button to instruct the Amiga to record either continuously or in single bursts. Finally, adjust the recording signal's timing until you obtain reliable results.

The AIR Windows program uses a visual display through which you control your devices. This IFF brush is set up in a fashion similar to your hand-held device, with on-screen buttons that you program so that they correspond to the buttons on your device. You can also create a brush from scratch with any standard Amiga paint program such as DeluxePaint (Electronic Arts). In the beginning, you should probably use one of the sample brushes provided. AIR Windows makes it easy to designate active areas on the remote that will respond when you click on them. To program the emulation, record a command with the IR Sampler and then transfer your recording to one of the buttons in the AIR Window. The process is fairly straightforward, and you should be able to master ►

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it with just a little practice.

I found that the system functioned reliably and was easy to set up. The operating range of IllumiLink, however, was limited to a distance of about three feet between the pillbox and the controlled appliance. By comparison, most of the original remote controls I tried functioned reliably even at distances somewhat greater than ten feet.

Preprogrammed AIR Windows operate in two ways. You can use the direct approach and click on various buttons on the screen, or, better still, you can link a collection of hot-key commands to various buttons and then iconify the AIR Window. You program the hot-key commands by including them in the ToolTypes list saved with the AIR Windows' Workbench icon. Now, you can still control the AIR Window from the keyboard



YOUR TURN!

I like using IllumiLink to control various Amiga workstations, from a wireless telephone or Bars&Pipes to AmigaVision and the Video Toaster. It performs without a glitch. The manual is very informative, giving numerous examples for a variety of applications. This tool is indispensable for anyone involved in interactive multimedia presentations or live electronic performance.

Rick Longenecker
Atlanta, Georgia

while not having it clutter up your Workbench screen.

If you wish, you can tie IllumiLink's wireless telephone interface to an AIR Window. This lets you use the Amiga to control equipment with the keypad of a wireless telephone without proximity to either the Amiga or the controlled equipment. There are many levels to IllumiLink's phone mode. The most simple (albeit restrictive) limits input to single-key commands, while a higher operating level supports up to 100 multiple-key commands. In still another, you can emulate mouse movements with your wireless telephone.

There is a lot more to IllumiLink than meets the eye, especially considering that the system fully supports ARexx. The package includes a number of sample scripts that provide a basis for using IllumiLink as the interface for multimedia presentations. With the appropriate remotely controlled hardware and Amiga software, it could be used to control presentations involving MIDI equipment and laser-disk players. One sample script even lets you use AmigaVision and a suitable VCR to manage single-frame recording.

At the very least, IllumiLink lets you turn your Amiga into a programmable, multipurpose remote control. If this is sufficient for your purposes, there is a simpler and less expensive version, called AirLink, which is similar to IllumiLink except that it lacks the telephone interface. If you have the necessary ARexx programming skills to integrate IllumiLink into a multimedia system, then this package may be just the bargain you have been looking for.

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AmigaDOS Hyper-Help

Active assistance a.s.a.p.

By Steve Pietrowicz

MANY AMIGA OWNERS find the CLI and Shell intimidating upon first inspection because there are so many different commands to remember. If your memory fails you, you must fall back on your manual—providing you can successfully locate it. If your work area is as organized as mine, that could take time.

I have often wished that Commodore would supply an electronic manual you could access while working in the CLI, but unfortunately, no such beast lurks inside your new machine's box. In an attempt to fill this void, Graphic Expressions developed AmigaDOS Hyper-Help, an on-line hypertext reference.

Once installed and running, Hyper-Help lets you easily access information

regarding any AmigaDOS command through a series of help screens. Each help page lists command functions, options, examples, and other helpful notations. Most of the descriptions provided are sufficiently detailed, but they can be a bit confusing to someone unfamiliar with the terminology. The program's examples, however, help to eliminate some of this confusion.

Don't Jump to Conclusions

As you may have guessed by its name, Hyper-Help utilizes hypertext technology to link certain words on each screen to other help pages. When you double-click on a word, Hyper-Help automatically jumps to a new page associated with that word.

While this hyper-text feature does make it easy to look up associated information, Hyper-Help's implementation falls short. If you click on an AmigaDOS command name, the program displays the page for that command. If you click on a word that is not a command, however, you might end up on a page with no apparent connection to the word you selected. For example, clicking on the word "applies" on the Diskchange page takes you to the Status page, which probably will not provide you with the help you are looking for. Fortunately, Hyper-Help has a "Flashback" feature, that takes you back to the previous screen so you can try a different track.

Command options are also keywords, which adds to the confusion. Clicking on the word "to" on any screen, for instance, always takes you to the Join screen, even though Join is not the only command with an option called "to." Unfortunately, it is not always apparent which words are special hypertext keywords. If all keywords were a different color from the rest of the text, or if they all were capitalized, there would be a lot less confusion.

When you boot Hyper-Help, the program loads its database into RAM and protects it from becoming accidentally deleted. You can, however, dump the database to disk if you are running short of RAM. Hyper-Help looks up information fairly quickly, even when running from a floppy disk.

Out the Window

Through easy-to-use pull-down menus, you can select any of Hyper-Help's command help pages as well as handy reference material for using control keys and CLI/Shell features. You can even start a new CLI or Shell session directly from such a menu.

If the help information you are viewing extends for more than one page, you must use your mouse to scroll ahead. This is inconvenient, however, and makes it difficult to control the scroll rate accurately. A scroll bar would have made things much simpler.

Once activated, Hyper-Help's window remains open until you exit the program. Although you can resize the window, it still remains on the Workbench screen, where it can easily get in your way when you are working on something else. An iconification feature that would let you turn the window into an icon when Hyper-Help wasn't in use would remedy the situation. An even better way to avoid clutter on the screen would be to utilize the Help key on the keyboard to call up the program.



YOUR TURN!

Commodore would be a lot better off if it included Hyper-Help with its machines. I found the program to be a big help, and I really enjoyed using it. It can really help a beginner out in a hurry.

Gary Smith
Sacramento, California

Hyper-Help is not copy-protected, and you can install it on a hard drive quite easily by using the installation script provided. The program's supplied user "manual" is just two pages of information, but it is adequate to get the program running.

New Amiga owners confused about how to use the CLI or Shell would benefit from a look at this program—but keep the program's limitations in mind.

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Back to the Drawing Board

Your review of the SketchMaster drawing tablet [Jan. '91, p. 23] should be an embarrassment for your staff. Opinions are one thing; misleading your readers is another. Your review is riddled with factual errors and inconsistencies—not to mention grammatical miscues. We are not upset with the unfavorable opinion of our product, but we believe that if Gene Brawn had made the effort to be accurate, he might have had a different opinion of our product.

The review states that each puck has three buttons and a crosshair. In fact, both R&DL's and Dakota's pucks have four extremely obvious buttons and two crosshairs. Your reviewer states that SketchMaster has an external power supply. Nothing in our system even resembles a power supply. A tablet that does not require a power supply is a very strong selling feature—as our advertisement with your publication highlights.

The second paragraph begins with "Apparently, the tablet gets extra power from the serial port. . ." The tablet gets *all* of its power from the serial port, on all models. The A1000 requires a special cable with a built-in resistor (available upon request from Dakota). It simply plugs into our serial cable, and then to the A1000's serial port. Nothing is ever mentioned in our setup instructions about "adding a resistor to the power pin on the serial cable." Mr Brawn's condescending comment about the soldering iron wouldn't be necessary were he truly concerned about writing an accurate review.

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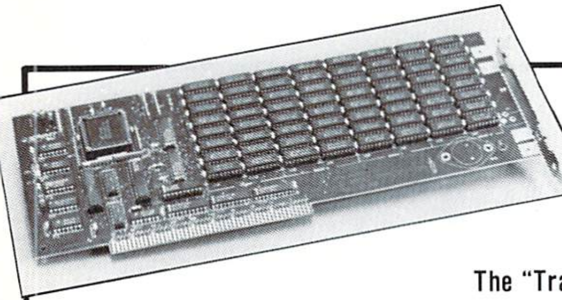
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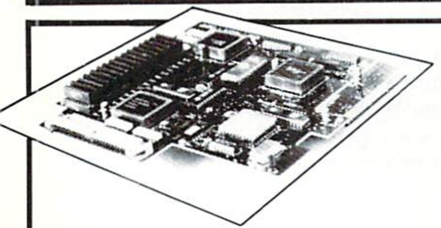
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bug that causes the screen cursor "to go crazy" in hi-res screens.

Mr. Brawn states that the mouse does not work when the stylus is connected. All Mr. Brawn had to do was simply move the stylus or puck out of the active area of the tablet, and the mouse would work fine. This is clearly stated in our instructions—twice. He also neglected SketchMaster when discussing overscan accommodation.

John Savage
Dakota Corporation

Unfortunately, I made two errors in my review of SketchMaster (version 1.2). First, I stated that the unit required a power supply; it does not. Second, I said that the mouse is disabled when the stylus is in use. In fact, the mouse functions normally when the stylus is removed from the active area of the pad. I sincerely regret these errors.

On the other hand, I retested SketchMaster and once again encountered a software bug that caused the cursor to "go crazy" in DeluxePaint's hi-res mode near coordinates 390(x), 300(y). The problem seems to depend on how long the tablet is used, rather than the result of any particular sequence of commands. This happened every time I used the tablet.

The only documentation included with my SketchMaster was a text file on the software disk. This section from the file's Appendix A prompted my "condescending" remarks about soldering irons:

"Because of power-supply differences between the A-1000 and other Amiga models, a special adapter is required in order to use the SketchMaster with an A-1000. An ordinary gender-changer will not work, although it will do no harm. (A circuit-path diagram follows 'for the technically inclined.')

"The resistor is mandatory! Failure to use it WILL blow your SketchMaster and may damage the +12v in your Amiga! Dakota Corporation and Chesapeake Software Systems make no warranties, express or otherwise, regarding the use of this information." There is no mention that the necessary cable is available from the Dakota Corporation.

Frankly, my problems with the software and the inadequate "manual" conspired against SketchMaster. Despite my errors, my opinion of the product I tested is unchanged.

Gene Brawn

Editor's note:

As a result of hurrying Gene Brawn's draw-tablets review through the edit process, two errors were introduced. Both the R&DL and Dakota pucks do indeed have four buttons, not three. Also, the line on p. 24 under the AProDraw section that reads, "Easyl and AProDraw also accommodate overscan" should instead read, "Easyl and SketchMaster. . .". Sorry, Gene.

Yakkity yak. . .do talk back! Send your comments on reviews to Back Talk, *AmigaWorld* Editorial, 80 Elm St., Peterborough, NH 03458. Letters may be edited for space and clarity. ■

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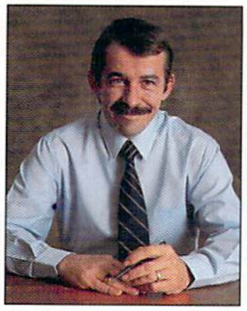
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WHAT'S NEW?

The March winds blow fair for Amiga shoppers. Check out the latest products for your A-machine.

Compiled by John Wolfskill

SOUNDMASTER BREAKS CD SOUND BARRIER

Oxxi/Aegis now offers **SoundMaster** ($179), an 8-bit digital, audio-sampling, hardware/software combination for all Amigas. Based on analog-to-digital (A/D) frequency-conversion technology, Soundmaster is one of the fastest sound digitizers available for the Amiga. The stand-alone unit boasts audio-sampling frequency rates of up to 56K, which is a notch above compact-disc standards.

SoundMaster comes with a built-in dynamic microphone, dual audio inputs, and two microphone inputs. A slider bar allows you to adjust the sampling volume, and a light warns when your input volume is too high. The unit attaches to the Amiga's parallel port with a 3-foot cable. Control for SoundMaster's hardware comes from Aegis AudioMaster III, a digital sound and waveform editor, which is also included in the package. Customers who already own the AudioMaster III software can upgrade to SoundMaster for $99. (Oxxi, PO Box 90309, Long Beach, CA 90809, 213/427-1227.) *RS# 502.*



SoundMaster has slider-bar control of audio-sampling frequency.

AND THEN SOME

Video Tools ($299.95) has been created specifically for the video professional. The multi-program package includes utilities for every production need, including those for creating subtitles and credits, a teleprompter, an image presenter, and a program called Ascension, which is a multimedia presentation tool with both point-and-click and script-based user interfaces. Other utilities include a side text scroller, a video pattern generator, colorbar and safe-area generators, and a video slate. Nine color fonts and a variety of graphic brushes complement the collection. (Eschalon Development, 110/2 Renaissance Square, New Westminster, B.C., Canada V3M 6K3, 604/520-1543.) *RS# 505.*

Scrunch those pesky disk space bandits with **Powerpacker Professional** ($29.95), a command- and data-file compactor for all Amigas. The program compacts program and data files, which makes it possible to store about 40 percent more data on your floppy or hard disk drive. This version packs files up to 50 times faster than earlier versions. In addition, it supports overlay files and file encryption. Other utilities provided with the package are a screen-text file ►

GENLOCK/ENCODER BOARDS GO 3000

Magni systems recently announced two new genlock/encoder boards for the Amiga 3000. The company's **NTSC Model 4004** ($1995) and **PAL Model 4005** ($2165) genlocks are now fully compatible with the Amiga 3000. Both models provide broadcast-quality RS-170A video encoding, plus the ability to perform fades, wipes, chroma keys, and overlays by using a remote-control box. In addition, both boards offer support for S-VHS component (Y/C) video signals, and operate in all Amiga graphics modes. Model 4000 genlock owners can gain Model 3000 compatibility by sending their boards to Magni Systems for a factory modification. (Magni Systems, 9500 S.W. Gemini Drive, Beaverton, OR 97005, 800/624-6465.) *RS# 504.*

HAVE CARD, WILL TRAVEL

Amiga 500 and 1000 owners can give themselves a leg up on inflation with Spirit Technology's new **XRAM** ($270) card. Billed as the *traveling* RAM card, XRAM is designed so you can take it with you when you step up to an Amiga 2000. The 8MB RAM expansion board is housed in an external chassis that plugs directly into the A500 or 1000's 86-pin bus expansion slot. Its 100-pin design allows it to serve double duty as an A2000 expansion card when you remove it from the chassis and place it in a standard A2000 expansion slot. The board has sockets for 8MB of RAM, which you can expand in 2MB increments by using 1MB memory chips. (Spirit Technology, 220 West 2950 South, Salt Lake City, UT 84115, 801/485-4233; 800/433-7572.) *RS# 503.*

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Colorburst has many applications - one important video application is as a **Professional** frame by frame Video Paintbox,Editing and Special Effects Machine. Its **low price** makes it affordable to most Amiga owners. **The Toaster** is an excellent accessory to use with Colorburst, although there are many more uses than as a front end Video Paintbox to Toaster type effects. **Call for our free color brochure or send $10 (refundable with purchase) for a Video of this spectacular product.**

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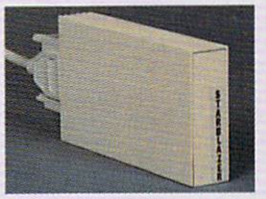
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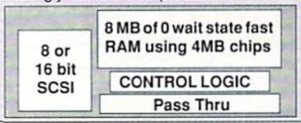
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Want to see a bunch of cool characters? Then check out the new fonts from CV Designs Computer Video. **The Cool Colorfonts Collection** ($40) comes as a three-disk set with character sizes (60 to 85 lines) that complement existing fonts available with CV's own Video Visions line of fontware, as well as those in other font, paint, and titling packages. Individual disks in the collection are available for $16.95 each. (CV Designs Computer Video, 61 Clewley Road, Medford, MA 02155, 617/391-9224.) *RS# 507.*

Turn on your blinker and go for the passing lane with **TurboText** ($99), a fast and easy-to-use text editor for the Amiga. In addition to a wide range of text-editing options, TurboText offers a truckload of advanced functions, including an ARexx port, programmer's calculator, hexadecimal editing window, outliner, text templates, keyboard remapping, and more. If you don't like the way the program looks and feels, you can change it, because Turbotext emulates popular Amiga, UNIX and PC text editors such as TxEd+, CygnusEd, MicroMACS, and QEdit. (Oxxi, PO Box 90309, Long Beach, CA 90809, 213/427-1227.) *RS# 508.*

There's lots of news this month from Progressive Peripherals & Software. The company recently rolled out three new products that should interest Amiga users. For that warm and fuzzy feeling, try **QicTape** ($599), an external tape backup drive for all Amigas. The external drive connects to the floppy-drive port, supports 40MB and 60MB mini-tape cartridges, and provides multitape support that should take the pain out of backing up large hard drives. QicTape comes with a 40MB tape cartridge, point-and-click backup software, and a comprehensive user manual.

Teach your Amiga to talk Mac with **DoubleTalk** ($449.95), an AppleTalk-compatible network card for the Amiga 500, 2000, and 3000. The system comes with an interface card, phone jack, network adapter, software, and manual.

Progressive also has expanded the power and versatility of its **3-D Professional** modeler with the **3-D Professional Ray-Tracing System**. The add-on module produces umbras and penumbras for rendering fuzzy shadows. It also renders blurred or imperfect transparencies, reflections and refractions, all of which provide more realism in 3-D rendered objects. The upgrade is free to all registered users, and will be included as standard fare in all future versions of 3-D Professional. (Progressive Peripherals & Software, 464 Kalamath St., Denver, CO 80204, 303/825-4144.) *RS# 509.*

LableDex ($74.95) solves the thorny problem of organizing and managing names, addresses, phone and fax numbers, floppy-disk libraries, and the other hard-to-remember stuff you accumulate at work. The program searches, sorts, and even dials the phone for you. The ARexx-compatible program can also catalog your disks and print $3^1/_2$-inch disk labels. The program supports HP Laserjet, Postscript, Epson, and other printers. (EasyScript! Software, 10006 Covington Drive, Huntsville, AL 35803, 205/881-6297.) *RS# 510.*

Structured drawing programs for the Amiga are in short supply and high demand, so the release of **ProVector 2.0** ($299.95) should be a welcome sight for Amiga artists. Three major additions to the object-oriented drawing package are multiple-level undo, a drawing layering system, and the ability to flow text along a path, such as a curve. ProVector creates drawings compatible with all popular Amiga desktop-publishing formats, allows you to draw in 256 colors, includes a multiple-window cut-and-paste option, and plots "Super" bitmaps for larger-than-screen drawings. The program supports any Amiga (preferences) printer. (Taliesin, PO Box 1671, Ft. Collins, CO 80522, 303/484-7321.) *RS#512.*

. . .PLUS GAMES GALORE

Tetris fans will find a new challenge in **FACES..'TRS III** ($39.95) by Soviet master programmer Alexey Pajitnov. Like Tetris, the game presents players with the task of maneuvering and positioning falling objects. This time the blocks represent human face segments. As the objects fall randomly from the top of the screen the challenge is to stack them in the correct order to form a human face. Hot Dogski!

Operation: Firefight, Falcon Mission Disk II ($29.95) is now available as an enhancement disk for Falcon F-16. Twelve new missions present new challenges, strategy, and adventure for F-16 aficionados. The missions are designed for successive play, with the objective of defending the player's home territory. (Spectrum Holobyte, 2061 Challenger Drive, Alameda, CA 95401, 415/522-3584.) *RS# 513.*

Deep strategy and ship-to-ship combat are the order of the day in **Star Controls** ($49.95), a game of galactic conquest that combines elements of strategic challenge and arcade action. It's cleverly designed so that players who want only starship-to-starship space battle can forgo scheming and step-by-step planning and get right down to business. (Accolade, 550 Winchester Blvd., Suite 200, San Jose, CA 95128, 408/985-1700.) *RS# 515.*

When the Sun goes down, the world belongs to **Night Hunter** ($34.95), a goulish and fright-filled arcade adventure that promises to scare the bejeepers out of you. In this one, you get to be the bad guy for a change. You can even play the role of Dracula himself. But if you're squeamish, steer a wide course around this one. (Electronic Arts, 1810 Gateway Drive, San Mateo, CA 94404, 800/245-4525.) *RS# 516.*

Nothing eludes its hairy grasp. In **Wrath of the Demons** ($59.95), the king needs your help to defend the realm, rescue the princess, and rid the land of the evil demon. Stand by for sensory overload, gang. This one comes with 600 action screens, 1400 frames of animation, over 3 megabytes of graphics data, and (count 'em) 100 sleazy monsters. Mercy! (ReadySoft, 30 Wertheim Court, Unit 2, Richmond Hill, Ontario, Canada L4B 1B9, 416/731-4175.) *RS# 517.* ■

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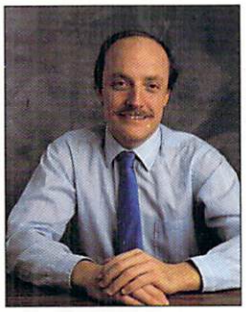
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THE PD PROSPECTOR



Listen to the music on the nets.

Compiled by Tim Walsh

For the latest in music and sound files, it will pay you to check the networks; you never know what goodies you'll find. Here are some current favorites, with file numbers and library locations listed for quick reference.

People/Link

Instruments for Deluxe Music Construction Set (AmigaZone Section 7; scan for files uploaded by User ID "OSS346"). Chimes, harp, spaceflute, electric bass—you name it, it's probably there.

MODTRACK6.LZH (AmigaZone Section 7, File #24917). A hefty (200K+) file that contains four large music modules for IntuiTracker 1.1.

INTUITRACKER1.1.LZH (AmigaZone Section 7, File #24749). Player for Sound Tracker and NoiseTracker (see CompuServe). Shareware, $10.

SCARLATTI _ (L104, L118, L164, L465, L474).LZH (AmigaZone Section 7, File #s 25290–25294). If you appreciate fine piano music, then you'll enjoy these small files for DMCS.

Looking for one of the all-time best DMCS scores? PLink's Amiga Chairman Harv Laser recommends his favorite, SUNRISE.ARC (File #11566), by Rick Sterling.

CompuServe

LISTEN.LZH (AmigaArts, Library 7). Erik C. Quackenbush's Listen version 1.2 plays any disk file as a sound sample.

TEM.LZH (AmigaArts, Library 7). Robert Slater's The Effects Machine. Option-laden sound editor that even plays sounds backwards.

NOISE2.LZH (AmigaArts, Library 7). NoiseTracker version 2.1. Adds provisions for MIDI and supports eight voices on Super Agnus-equipped machines.

XTPLAY.ZIP (AmigaArts, Library 7). XTracker Module Player, version 3.0. Plays SoundTracker and NoiseTracker modules.

CompuServe's Amiga experts Steve Pietrowicz and Betty Clay both acknowledge that music and sound files are the hot downloads nowadays, with files available by the dozen. Visit AmigaArts and find the players in Library 7, the sound files in Library 5.

GEnie

MED213.LZH (Library 7, File #9814). Version 2.13 of MED—yet another full-featured music and sound editor.

TAILWIND.LZH (Library 7, File #9759). A stand-alone piece of meticulously composed stereo music that opens a window and plays in the background.

SOFTHUNTER.LZH (Library 7, File #9647). A popular download on most Amiga nets, Softhunter is another background music composition.

SCARYORGAN.ZIP (Library 6, File #9313). This large (470K) IFF sound sample is Bach's Toccata and Fugue in D minor, better known as the "scary" organ music in classic movies.

GEnie is acknowledged as the undisputed champ in providing Amiga sound and music files. Sadistic humor probably accounts for Mrs. Fletcher's digitized plea for help, FALLEN.LZH (Library 6, File #9082) being one of the top downloads.

Prospector's Perch: Amiga music and sound: the low cost alternative.

AMIGAS STAND APART from some other personal computers when you're making music because they require no sound boxes or other hardware attachments. Making your Amiga sing is inexpensive, too. Unless you have a specific application where you need a MIDI keyboard, sound and music editors are in ready supply on the networks.

Download a few, run some RCA-type cables to your monitor, or else use Commodore's low-cost A10 Stereo Speaker System, or something similar, and you're in business.

The above listings show that the networks provide your Amiga with the files needed to make music, special-effect sounds, and digitized speech. Now that AmigaVision accompanies each new Amiga sold, there's an urgent rush among Amiga computerists to build their sound libraries.

On a final note, when seeking PD software, don't forget the alternative sources. These include Amiga-specific publications, BBSs, user groups, Amiga dealers, and mail-order firms. Just find a place where Amiga enthusiasts gather, and you'll find a source for PD disk collections.

If you're interested in establishing an account on any of the above networks, here are the voice numbers to call to get under way:

American People/Link: 800/524-0100
CompuServe: 800/848-8199
614/457-8650 from within Ohio
GEnie: 800/638-9636

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HELP KEY

While some think he should SLEEP on the job, Lou's always ready to answer your questions.

By Louis R. Wallace

PAUSE FOLLOW-UP

Several people wrote to comment on the "Pesky Pause" (Dec. '90, p. 156) question and its Amiga Basic program answer. These folks correctly pointed out that the Amiga Basic SLEEP command would have handled the problem as well as the routine I suggested, and it would have been simpler to implement! You are all quite right; thanks for writing.

On a related note, Ron Cardinale (of San Francisco, California) wrote to discuss the issue of using the TIMER command. He mentioned that there is a potential flaw in using the TIMER in programs that control other equipment because the TIMER resets to zero at midnight. That means TIMER has a possible range of values between 0 and 86399. So if you are measuring elapsed time using TIMER, at the witching hour, your program could fail to accurately report the interval or respond accordingly. If this situation might happen in your applications, you should add some extra code. Ron suggested using the following:

```
TIMEDELAY=10
STARTTIME=TIMER
LABEL:
T=TIMER-STARTTIME
IF T<0 THEN T=T+86400
IF T<TIMEDELAY THEN LABEL
```

DISC O' VIDEO

Q: *I am thinking of buying AmigaVision and developing some multimedia applications that use video from a laser disc. Which laser-disc players are supported by AmigaVision? Also, I want a large monitor to display the output and was wondering if I would need a special monitor.*

V. Masayesve, Jr.
Hotevilla, Arizona

A: The current version of AmigaVision is version 1.53G. It comes with direct support for the following laser-disc players:

Phillips 405, 410 and 835
Pioneer 2200, 4200, 6000 and 6010
Sony 1200, 1500, 1550 and 2000
Sony Umatic9 (3/4-inch tape)

Drivers for other laser-disc players are under development. I have even heard that a driver for the new PC-VCR is being considered. (The PC-VCR is a VCR designed by NEC to be computer-controlled.) I was recently told by Bill Teller of Amigo Business Computers (192 Laurel, East Northport, NY 11731, 516/757-7334) that the company has developed an AmigaVision driver and cable for the Pioneer LD-V2000 laser-disc player. The Pioneer 2000 is normally an infrared-controlled player, but Amigo Business Machines created its own hardware interface and AmigaVision-compatible software. The list price of the system with player, cable, and software is $649.

As for the monitor, you can use just about any monitor that supports NTSC and stereo (or mono) sound. Which one you choose depends on the model of genlock you are using and what its video-out options are.

RANDOM HELP

Q: *I wrote a program in Amiga Basic that asks the user to guess a number. The user enters a guess, and then the computer says if it is too high, too low, or the correct number. I want to add a random number generator, but can't figure out how to do it. Please help!*

M. Smith
Sausalito, California

A: Two commands in Amiga Basic are associated with random numbers. RND returns a random number between 0 and 1, while RANDOMIZE TIMER generates a random number sequence based on the current value returned by the TIMER command.

In your program, issue the RANDOMIZE TIMER command early to create a new and unique random number sequence. Then use the RND command to generate the random numbers you need. For example, suppose you want to generate a random integer between 0 and 40. In your program you would use a statement such as:

```
X=INT(RND*40)
```

If you wanted to get fancy, you could write the routine as a subroutine that accepted values determining the upper and lower limits of the range of numbers to generate. Then all you would do is call the routine with the required parameters, and it would return a random number within the desired range. As in:

```
RANDOMIZE TIMER
LOWER=20
UPPER=50
GOSUB MAKERANDOM
'program specific code here
'returns random number as value
MAKERANDOM:
VALUE=INT(RND*(UPPER-LOWER)+
  LOWER+.5)
RETURN
```

KEEP THOSE QUESTIONS COMING

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Featured Disk

WB79: Home & Business Accounting - Includes Ckbacct - the most complete checkbook accounting program going, LCDCalc - this well done calculator has a very large display and operates from the keyboard or mouse, Mileage master - monitor your automobile mileage with this mileage log, Grammar - a grammar checker, and Worldtime - the time displayed in 50 global cities.

New Disks

FD46: Adventure Game and Trek Trivia - This disk was submitted directly to us by George Broussard. George has created a well done graphic adventure game, loaded with lots of interesting puzzles and challenges, similar in concept to Larn and hack. Also contains Trek Trivia, an outstanding, and very challenging set of StarTrek trivia questions.
FD47: Arcade Games - Contains DownHill - a demanding computer slalom ski game, MicroPac - a Workbench mini-pacman game, CrackOut - a break out clone, Jet - a superb aerial dogfight game, AmegaRace - an interesting astercids type of game, and WindyDay - a unique arcade shoot'em up.
FD48: Puzzles - Contains CWP - a very well done full featured cross word puzzle game and generator, Concentration - like the card game, Hollywood trivia - a very large set of trivia questions on topics including StarTrek tng, HitchHiker's Guide, Indian Jones, StarsWars, MASH, and more.
FD49:Chaos Cheats - This disk contains an everything you wanted to know about cheat set for Chaos Strikes Back, including full maps, spells, object locations, super characters and more.
WB76: Applications - This disk contains Stickery - a often requested knitting design program, Lotto - a rather complete lottery tracking and prediction utility, SSS - this screen capture program can grab almost any screen including games, Today - a personal calender, Tarot - fortune teller, and Grammar - grammar checker.
WB77: AV_Demo - a well done Amiga Vision Demo program.
WB78: AV - On this disk are two Amiga Vision programs (bubbler, sync) written by Lou Wallace, chief technical editor of Amiga World. These programs are marvelous examples of how too's with AV.
DD75: Intermediate Utilities - ConMan (v1.3e) this very popular shell and cli replacement now also works on an A3000's, BinTape, MWTape - two scsi tape archivers, Password - system wide password protection, Woodward - displays software attempts to open any file or libraries (great for finding out why a program exits early). Also CliAnywhere, DosError, Eco, Executer, Gstart, Jmenu, Journalab, LockDevice, MadBlanker, and PS.
DD76: Viewers & Readers - This disk contains several of the most popular text readers and graphic viewers, including several ANSI display programs for adding ANSI graphics to your text files, Additions to the ever popular PowerPacker series (see dd54) including pplib, ppmore, ppshow, and pptype. Also FView and MultiView, two paint display programs, Leggi - a multi Font editor, and more. Many of these program can be used from the Workbench.

Other Great Disks -

FD5: Tactical Games - BullRun - a Civil war battle game, Metro - you play the role of a city planner. Build wisely and your system will be a success, but poor planning will lead to disaster and financial ruin. Very very habit forming.
FD6: GAMES! - This disk is chock full of games including; Checkers, Clue, Gold - A new slide the pieces puzzle, Jeopard - An enhanced version of Risk, RushHour - Surprisingly addicting, and SpaceWar - Best described as a cross between Combat-Tanks and asteroids.
FD7: PACMAN - This disk contains several pacman type games including; PacMan87, MazMan and Zonix.
FD9: Moria -. This has great graphic controls, multiple spells, similar to Larn and Hack. Play time several weeks!
FD10: HackLite - A dungeon adventure game. Considered a must-have classic. This is the second release of this game on the Amiga. Great Amiga graphic interface. Play time several weeks!
FD12A,FD12B: Star Trek, The Game - This is by far the best Star Trek game ever written for any computer. It features mouse control, good graphics, digitized sound effects and great gameplay. Counts as 2 disks. Req. 1Mb and two drives (or hd).
FD13: Board Games - contains multiplayer Monopoly, Dominoes, Paranoids, and others.
FD14: Dungeon Master Hints and Arcade Games - DM maps, spells, item location, and hints and more, also on this disk, Hball - an arkanoid/breakout type game, Trix - a Qix type clone.
FD16: Strategy Games - Includes Diplomacy and Empros, both great conquer and rule multiplayer games similar in concept to Simcity and Populace. Also includes blackbox, hearts, and others.
FD17: Educational Games - This disk includes several games for the younger members including geography, math, science, and word games, also includes Wheel of Fortune.
FD20: Tactical Games - MechForce(3.72); A game that simulates combat between two or more giant, robot-like machines. Simple words can't begin to give you the feel of piloting a 30 - 40 foot tall, fire breathing, earth shaking colossus that obeys your every whim.
FD29: Shoot'em up's - WWII - you're the pilot of a WWII plane flying through enemy territory, you've just been spotted, good luck on you mission, SpKiller - try and penetrate enemy lines with this game, and Retaliator - another great game.
FD32:Flight Simulator - Includes an instrument flight simulator for a DC10.
FD33: Arcade Games - Ffreddy a mario brothers type of game, Gerbils a target practice game, PipeLine a German interpretation of Pipe Dreams, Tron a light cycles version, and wetroids a wonderful version of asteroids with a hilarious twist.
FD37a & b:Tactical Games - Empire (2.2w) This great game comes highly recommended. Now with a full-featured graphic front end.
FD38:Games - Cribbage Master - A great cribbage game and tutor, Spades - a well done card came, ChineseCheckers - A computer version of this classic, Puzz - a slide piece puzzle game and construction set.
FD39a & b:Tobias Star Trek - This is a new, completely different version of Star Trek than that found on FD12. This one was created by the German author Tobias. Now with English instructions. Very Excellent!!! Counts as two disks. Requires 512k memory, a 500, 2000 or Pal.
FD40:Arcade - MiddleEast - a timely arcade game of death and destruction set in Iraq, BackToTheFutureII - a very playable demo version of this soon to be released commercial game, City - a missile command clone.
FD42:Games - Includes SpaceWar3 - a remake of this original Amiga classic, Trippin - a fascinating board game of intrigue, strategy, and player manipulation, Dominion - an engrossing strategy game of galactic war and conquest, Frog - a frogger type clone, and Mines - a very challenging strategy board game.
WB4:Telecommumnication - This disk contains several excellent pd communication programs designed to get you on line quickly and easily, Access (1.42) - A very nice ANSI term program based on Comm v1.34, but with the addition of transfer protocols, Comm (1.34) - Last version of one of the best public domain communications programs ever made on the Amiga, Handshake (2.12a) Handshake is a Full featured VT52/100/102/220
WB5 - Fonts #1- Several fonts (35) for the Amiga, also included are five PageStream fonts,and ShowFont - a font display program.
WB7: Clip Art - This disk is loaded with black and white clip art. Art includes, trees, watches, tools, US and State maps, and more.
WB10:Virus Killers - The latest and best VirusX(4.0), Kv(2.1), and ZeroVirus(1.3).
WB12: Disk Utilities #1- This great disk is loaded with wonderful utilities for everything including making disk labels, disk cataloging, disk optimizing, disk and file recovery, archiving and organizing, and all sorts of file and directory manipulation. Incudes SID, greatly reduces CLI use.-
WB13: Printer Drivers and Generator - over 70 different drivers, and if these don't do it, with PrtDrvGen you can make your own.
WB15: Business - This disk contains a spreadsheet, a database, a project/time management program and financial analysis (stocks).
WB16: Business - This disk contains an inventory manager, a loan analysis program, a great calendar/schedular, a rolodex program, and pennywise a good "Cash Book" accounting for home or office.
WB18: Word/Text Processors - This disk contains the best editors. Includes,TextPlus (v2.2e) a full featured word processor, Dme(v1.35) a great programmers editor with strong macro features,TexED(v2.8) an enhanced Emacs type editor, and a spell checker.
WB20: General Interest - DiskSalv V1.42 a disk recovery program for all Amiga file systems, FixDisk V1.0 another file recovery program with features DiskSalv doesn't have, 3DLookt gives a 3D appearance to your WorkBench, Clean V1.01 a program to de-fragment memory, Tracer - trace any part of an image.
WB23: Graphics and Plotting - Plot (20b) a three dimensional mathematical function plotter. Can plot any user defined function, BezSurf2 - produce awesome pictures of objects one could turn on a lathe. Can also map iff image files onto any surface that it can draw. Now compatible with most 3D packages, and VScreen - makes a virtual screen anywhere, great for DTP .
WB25:Educational - On this disk are two programs that can generate maps of differing types, World Data Base uses the CIA's data base to generate detailed maps of any entered user global coordinates. Also Paradox a great demonstration of Albert Einstein General Theory of Relativity.
WB26: Disk Utilities #2 - MrBackup, KwickBackup - two well done utilities to help with harddisk and floppy disk backups, FileMast - a binary file editor, Labelprinter - Disk label printer with very powerful features.
WB27: Nagel - 26 Patrick Nagel pictures of beautiful women.
WB29: Graphics and Sound - This disk has several different Mandelbrot type programs for generating stunning graphics. Includes, MandelMountains - a realistic terrain generator, Fracgen - generated recursive fractals from user input, Mandelbrot and Tmandel - two fast mandelbrot generators, also Mostra - the best IFF display program to date, will display ALL IFF's including Dynamic HAM, and Sound - a great IFF sound player, will play anything. Try this disk, you'll love it!
WB33:Circuit Board Design - several terrific routines for the electronic enthusiast, Including PCBtool - a circuit board design tool, LogicLab - circuit logic tester, and Mcad (1.26) a well done new release of this PD CAD program, now comes with predrawn common circuit components for insertion into schematics.
WB36: Graphics - On this disk are several programs to create stunning graphical images including, MPath - creates swirling galaxy images, Roses - produce an unlimited number of variations of images t symmetrically similar to a rose, SimGen - display those spectacular images as part of your workbenck screen, and RayShade - a very good raytracing program, create your own beautiful 3d graphics.
WB38: Plotting and Graphics - Plotxy is the most powerful full featured plotting package. Used by many colleges and universities. A welcome addition to our library! Highly recommended. Plans - a incredibly well done Computer Aided Drafting program, very full featured. Tesselator - a program that helps generates fantastic looking, recursive M.C. Ecsher type pictures.
WB39: Music - Intuitracker is an German offer of an exquisitely well done program that allows you to play music on your Amiga with CD like controls. Lets you strip out music from your favorite games or others and include them in your music library.
WB40: Music - "CD on a disk", 90 minutes of modern music on this well presented collection.
WB41: Music - MED an incredibly well done, full featured music editor. Create your own stunning music directly on your the Amiga. Similar to SoundTracker but better. Very powerful, easy to use program.
WB43:Business - This disk contains AnalytiCalc - probably the most powerful spreadsheet program on the Amiga. A full featured spreadsheet with many features expected in a commercial package.
WB53:Graphics- The disk contains C-light - The easiest to use raytracing we have seen to date. This one started out life as a full featured commercial product similar to Sculpt3d. Raytracing programs can generate stunning, realistically shaded objects. Also, sMovie - a full featured video text titler similar to ProVideo, Broadcast Titler. Great video scrolling, wipes, special effects, and more...
WB54:Printing - This disk contains several routines to help with the chore of printing. Includes Gothic - Finally a Banner printer for the PD! PrintStudio -a well implemented all-purpose printer-utility with a very comfortable graphic interface and many advanced features, Lila - with ease, print ASCII files to a PostScript printer, and many more.
WB55:Application - XCopyIII - a full featured disk copier, make backups of write protected disks. RoadRoute - find the quickest route from one city to another, highway description included, Diary - a diary program like "Dougy Howard M.D", Cal - a calendar program, Magman - a database tailored to maintain records on articles and publications.
WB71:C64 Emulation - The A64 Package is a complete, very powerfull, Commodore 64 emulator.
DD47: Pascal - This disk contains everything needed to program in Pascal. Includes, A68k (1.2) 68000 assembler, Blink linking software and PCQ (1.0) a modest Pascal sub-set compiler.
DD49: C Compiler - contains zc(1.01) fully K&R, zcc(1.0) front end, A68k(1.2) assembler, Blink linker.
DD51: Circuit Analysis - Aspice (2.3) A full featured program for electric circuit analysis.
DD52: Scientific - Includes Elements - an incredibly well done periodic table program with source, Scientific plotting - over 600k of Lattice C source routines that can be included in your own programs.
DD54: Compression - This disk is loaded with ALL of the best file compression programs and aids for the Amiga. Many of the programs can be used by the new user. Includes Arc(2.3), Lharc(1.0), Lhwarp(1.03), Pkax(1.0), PowerPacker(2.3a) a must have by all, Zip(1.0), Warp(2.04), and Zoo(2.0). Also IFFcrunch an excellent compression for IFF files.
DD55: ARP - On this disk you will find the complete ArpRel3.0 release including the full user docs, the full Developers guide, and Conman (1.4). ARP is the official AmigaDOS Resource Project (ARP) release 1.3. ARP makes many improvements to AmigaDOS and makes your system easier to use from the CLI.
DD57: Advanced Utilities - Msh - like Cross-dos, copies files to and from MS-DOS, Pal-NTSC - convert any pal program to NTSC and vice versa, Also several utilities that improve your startup-sequence, plus 25 more programs.
DD62: Basic and Xscheme - Cursor - a full featured Amiga Basic compiler, sbasic and ftext - several wonderful routines to help in basic programers, and Xscheme - an interpreted object oriented language.
DD65 C Tutorials - Several well done tutorials on how to program the Amiga. Includes tutorials and working examples on Device drivers, IFF reads and writes, Sound implementation, Arcade game design and implementation, Double Buffering, and others. A must have for Amiga Programmers.
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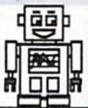
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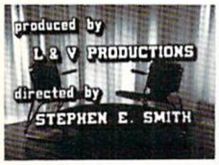
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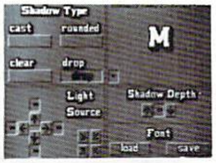
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LAST LICKS

EAR TO THE WALL

Que pasa, UnixWorld? We found a quick peek in *UnixWorld's* December issue mail column rewarding: "Editor's note: The second-largest pile of mail we've ever received results from our exclusion of the Commodore Amiga when discussing the topic of multimedia in the August issue." Following the notation were two letters from Amiga users who scolded the multiplatform for ignoring the Amiga's multitasking capabilities that are necessary for seamless multimedia productions.

Push-button prince. We erred recently: On page 86 of our January 1991 issue, we said that Broderbund's swashbuckling adventure, the Prince of Persia, requires a joystick. It does not.

Amiga, live in concert. Fans of Ken Bookstein and classical music *à l'*Amiga can explore their interests at New York City's Lincoln Center on March 22. The eight o'clock concert in Alice Tully Hall features Bookstein on piano with orchestral accompaniment provided by the Amiga.

Mass market master blaster. Reports keep coming in about Commodore's plans to blanket the mass market with an even lower-cost low-end Amiga during the coming year. The firm seems intent on duplicating its C-64 strategy (over 11 million served) by offering the best home computer money can buy. Hey, aren't they doing that already?

Moving and shaking. Commodore International Ltd. has announced the appointment of James Dionne as general manager of its US sales company. He succeeds Harry Copperman, who has been named a vice-president of Commodore International, with new responsibilities that include Amiga multimedia strategies. Dionne, an 11-year Commodore veteran, was most recently in charge of Commodore's Canadian sales subsidiary.

Commodore has also announced that an extensive reorganization has resulted in a significant reduction of personnel in US operations.

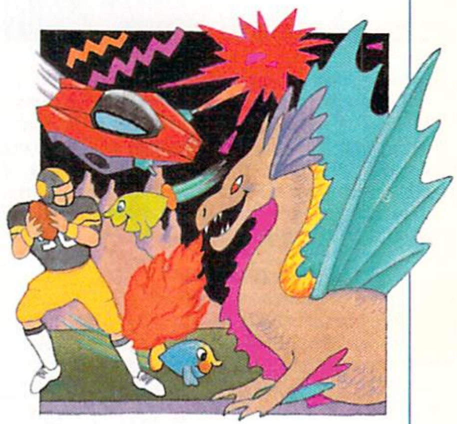
Guess who's shipping... Just as our review of Pagestream 2.0 hit the streets, along comes Gold Disk with an extensive rework of its venerable Amiga desktop publisher, Pro Page. Look for a review of version 2.0 in a forthcoming issue.

Aw, shucks! Although *AmigaWorld* tries hard to avoid errors by checking facts before publication, we are human and do occasionally goof. In the lead article ("Multidimensional Multimedia") of last month's issue, we listed the price of Elan Performer 2.0 as $59, whereas it is actually $149. We then compounded the error by printing the wrong telephone number for the manufacturer, Elan Design. The correct number is 415/359-7212. We regret these stumbles.

Back rubbing. Sources close to Big Blue report discussions between Commodore and IBM aimed at achieving a cross-licensing agreement. Legal eagles know that cross-licensing involves the trading of patent rights. We can only guess, but it would make sense for IBM to want to bundle the Amiga custom chips with its DVI data compression/decompression chip set. In this way, IBM could quickly pull image data off a CD-ROM, and then have the graphics horsepower to do something with it. But who knows?

SOAP BOX

EDITOR'S NOTE: Each month in this new department, we will present an opinion piece—an essay, really—that we hope will provide food for thought for members of the Amiga community. Essays will come from a variety of different members of that community: AW editors and readers, Amiga users and developers, or even a spokesperson from Commodore on occasion. We welcome feedback from all quarters; perhaps some of the responses may become the basis for future "Soap Box" essays. If you would like to reply to any opinions expressed here, please write to Jan Jackson, "Soap Box," AmigaWorld, *Elm St., Peterborough, NH 03458.*



What's in a Game?

UNTIL RECENTLY, GAMERS haven't worried much about how the public perceives the Amiga. That's because gamers have a positive self-image and a strong sense of their own personal worth. They don't need constant reassurance that they own the right computer.

However, some nongaming users are getting frustrated because the big software companies don't want to port their latest boring business products to the Amiga. These users regard gamers as an embarrassment. They want people to associate the Amiga with work instead of play, so that the big companies will finally give in and go Amiga. Then we can all start enjoying that swell IBM productivity software. Gee, won't that be great?

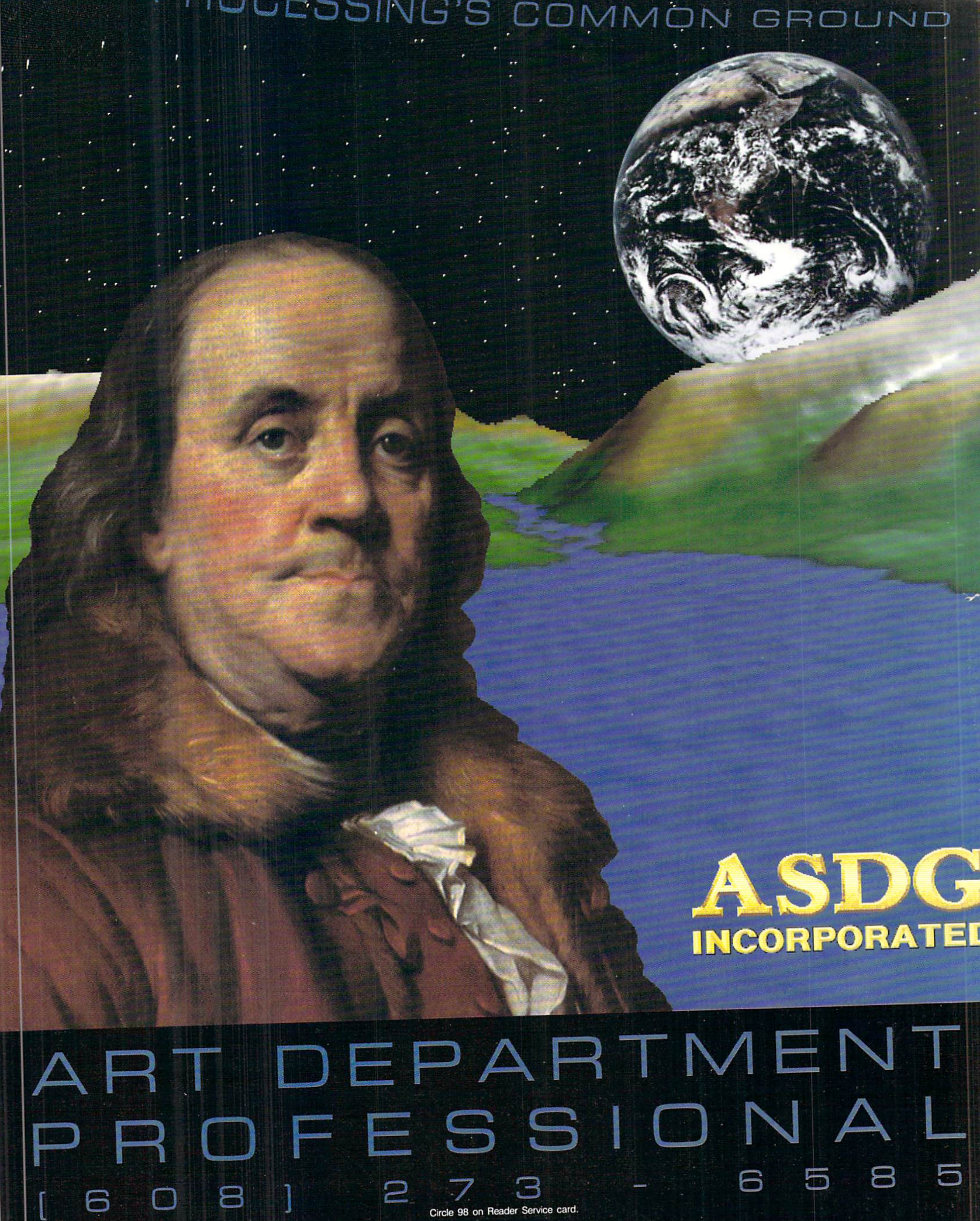
But wait—if IBM begins to appear on the Amiga, a few IBM games might get ported over, too. That would be awful. Those big companies only publish the crummy, generic games that IBM computers can handle, but they have plenty of cash. They can license famous movie and comic characters to headline their bad games, and they can peddle those bad games with expensive media blitzes. They can crowd out superior Amiga-only games, created mostly by small companies that can't match this kind of muscle. Eventually, as people come to think of the Amiga as a business machine, the good games will disappear completely. Angry gamers will then shun the Amiga. Chaos and anarchy will prevail.

Sound bad? Then reject the current attempt to divest the Amiga of its rightful gaming heritage. After all, games push the envelope. Games show off our machine. Games are the noblest and most demanding of computer applications. By comparison, productivity is the province of deeply disturbed individuals who would rather manage mailing lists or balance their checkbooks than blow up enemy spaceships. They may appear to be harmless drones, but they are evil. Never forget, these are the fanatics who killed the Guru.

Now they want total control. Only you, the Phantom Avenger, have the power to stop them. Press the firebutton to begin.

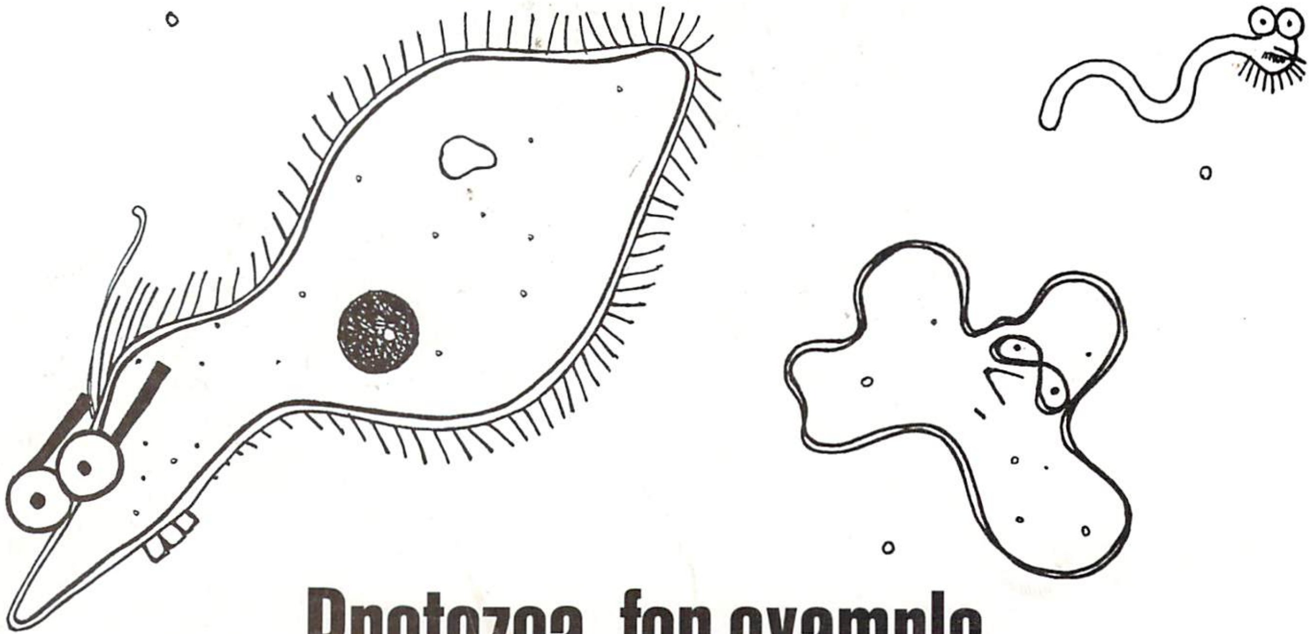
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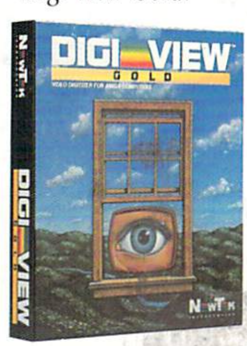
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